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ORIGINAL ARTICLES.

PHYSIOLOGIC ACTIONS AND THERAPEUTIC INDICATIONS OF THE SALTS OF SILVER.*

THOMAS LUTHER COLEY, A.B., M.D., PHILADELPHIA, PA.

The writer's intention is to discuss the physiologic actions of the salts of silver upon the economy, and the therapeutic indications deduced as the result of such study. This is not a plea in advocacy of any new remedy, but a simple statement, based upon our present knowledge of what an old and tried medicament will and will not do. In the multiplicity of new remedies put upon the market by the great chemical firms of the country, we are often tempted by the glowing accounts we read to employ these agents to the neglect of the better known drugs. Without denying the value of many synthetic preparations and the alluring possibilities this field opens, it seems more rational to use the older and simpler remedies which empiricism and physiologic research have sanctioned. By employing a few drugs only, and being familiar with the remedial action of these, we will achieve better results than by using every new compound presented to our notice, the vast majority of which will soon sink into total obscurity.

The use of the noble metals in medicine dates back many centuries. They were employed for a variety of disorders with no idea of their action, but with a blind trust that such excellent possessions must have as potent an influence upon the economy as in the world without. The alchemist Geber, a native of Mesopotamia, who flourished in the eighth century, was the discoverer of the nitrate of silver, which he employed as a remedy. He also discovered and dialyzed the red oxide and the deutroclorure (bichloride) of mercury, nitric acid and hydrochloric. Geber's works, translated into Latin, notably the *Summa Perfectionis*, and the *Liber Philosophorum*, are extant. These works were the first which laid down the true principles of chemistry, fusion and the purifying and malleability of metals. After Geber, whom Roger Bacon called the Master of Masters, we must go to the beginning of the ninth century for the next work of scientific importance, that of Rhazes. Avicenna, in the eleventh century, refers to the use of silver filings as a remedy. This observer was educated in the famous schools of Bagdad, and was known as the Prince of Doctors by his contemporaries. Among his numerous works in Arabic was one entitled the *Canon*, a medical encyclopedia, which was translated into Latin and spread through Europe by Avicenna's pupil, Haroun-the-Jew. It served as the basis of teaching for six or seven centuries. It is interesting to note that Paracelsus, who

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died in 1541, placed a high value upon the remedial value of silver. He advised its internal use dissolved in a distillate of nitre and vitriol. H. Cardanus and A. Paraeus, both of the sixteenth century, employed lunar caustics dissolved in rose water as a hair dye. This imparts to the hair a ghastly, bluish-black tint. It may be remarked in passing that in the Culpeper's London Dispensatory, of 1659, no mention is found of the employment of the drug. Toward the latter end of the last century we find the drug used in epilepsy and many nervous affections. In the year 1798, Nord, of Vienna, experimented with it upon insane epileptics. Its use as a caustic probably dates from the early part of the sixteenth century. A hundred years later it was commonly employed for this purpose and gained great favor.

By far the most scientific and generally important use of silver is locally in the form of the nitrate, and it will be well to inquire into the rationale of its employment. It belongs, along with zinc, lead and bismuth, to that class of drugs which are not irritant although astringent. Its local action is that of an astringent, antiparasitic and a powerful but superficial escharotic. It precipitates albumin and thus forms a coating which protects the deeper tissues. Rossbach and Rosenstein, experimenting upon the mesentery of the frog, have shown that its action upon the blood-vessels is to rapidly contract them in from fifteen to fifty seconds. They believe this result is brought about by the direct local action, and not by reflex action through the vascular centers. In weak solutions of 1-100 the vessels may be constricted to half the normal caliber. These authors also point out that the action upon inflamed tissues is even more intense and that its influence in modifying the outwandering leucocytes must be important.

Among the newer preparations of silver there is one—*Argentamine* or *Ethylenediamine,* which, while possessing no greater toxic power than the nitrate, gives no reaction with albumin or serous fluids. This fact is owing to the solvent character of ethylenediamine, which is an organic base $C_2H_4(N.H_2)_2$. On this account the albuminous precipitate is not formed upon the superficial parts to which the salt is applied, consequently the deeper tissues are reached by the drug. *Argonin* is another silver salt of similar action. It is prepared in the form of a fine white powder from sodium casein with alcohol. It is soluble in hot water. Argonin and nitrate of silver must be kept in the dark, since in the presence of light they are reduced to insoluble substances which have been regarded by different authorities as finely divided particles of metallic silver, but is more probably oxid of silver. The local action of the oxid is not caustic but probably astringent merely.

Based upon the action of the nitrate of silver its therapeutic indications are to be considered. In general, it may be used to advantage in inflammatory conditions of the mucous membranes. We must bear in mind, however, the very superficial action as an escharotic. It is clear also that the effect in acute inflammatory conditions will be greater than in chronic states for the reason that the drug's contractile powers upon the vessels will be of advantage in reducing the inflammation in the first case, while an increase in the vascular activity is necessary in the chronic, low grade inflammations before the healing process can be brought about. Seiler has shown that the pain caused by the application to the throat of solutions of sixty grains to the ounce, is much greater than that of a solution of twice the strength. The effect of the salt in many of the acute conditions of the throat is almost specific.

It has long been the custom to endeavor to abort cases of urethritis when seen very early, but this is of doubtful value. Deep injections of the salt have been much lauded for the treatment of posterior urethral inflammations, but when the superficial action of the drug is remembered we can no more reasonably expect better results from argentamine or argonin which do not coagulate albumin, thus producing a coating which prevents the action of the drug upon the deeper tissues. In the use of silver upon the conjunctiva, the application should always be followed by a saturated sodium chloride solution for the purpose of neutralizing the excess of the silver. Any ulcerated condition of the cornea contraindicates the use of silver since a precipitation of the silver is likely to occur, thus producing opacities. In the treatment of superficial ulcerations

such as those of the leg, the same general conditions will hold good. Deeper escharotics than silver nitrate should be used where the ulcer is sluggish and the inflammatory re-action poorly marked. The action of this salt, however, upon such lesions as herpes, where an astringent and slight caustic action is needed would seem to be all that is desired. Besides the purely local action here described silver unquestionably produces an effect upon the nervous system. This will be discussed later.

Wood and others recommend the application of solutions of silver nitrate to the scrotum in cases of beginning epididymitis and freely applied around the whole finger around a felon in the early stages. The writer has used a strong solution painted over the area of beginning furuncles in obstinate cases, but without appreciable result.

It is especially in disorders of the stomach and intestine that the internal administration of silver seems of most benefit. When the soluble nitrate is taken into the stomach the free hydrochloric acid will quickly convert part of it into the insoluble chlorid, and many physicians freely express the opinion that the drug is worthless so administered on account of this fact. A further consideration, however, will show that in the presence of sodium chlorid and the excess of albumin, more of the albuminate than the chlorid of silver is formed. In this or some other intermediate form silver is absorbed. How, we cannot say with certainty, but we find the tissues stained with it after prolonged use. This condition, known as argyria, is one to which we will again refer.

The introduction of the drug into the stomach is followed by violent retching and gastro-enteritis. The chlorid and albuminate are vomited together with the free residue. It is fortunate that large doses are not absorbed on account of the free vomiting which occurs. The treatment is to promote the vomiting mechanically by giving diluted salt solution in water or milk or whipped white of egg. The damage produced by the poison is not usually great unless by any chance the stomach happens to be empty.

The poisonous effects of silver after long-continued administration with the food are: General disturbances of the functions of nutrition, loss of appetite, hyperemia of the lungs, swelling and fatty degeneration, or infiltration, of the cells of the liver and kidney, and of the heart and muscles, and a noticeable diminution of temperature.

A study of the systemic action of the drug, based upon the many experiments which investigators have made, reveals several points of interest. In the early seventies Dr. Blake concluded that when organic salts were injected directly into the circulation, the intensity of their physiologic action increased in proportion to their molecular weight, but only in those groups of metals which were isomorphic, *i. e.*, which crystallize in the same form. He observed that those groups whose salts crystallize in different forms had distinct physiological action. He divided the elements into nine groups, the physiologic action of the different groups differing in kind while that of the individual action of the same group agree in kind but differ in degree.

Thus, he states that the salts of the first group, which concerns us, increased in activity in the order mentioned: Lithium, sodium, thallium, cesium and silver. According to this investigator they produce death by acting upon the lungs and impeding the pulmonary circulation. None of them affect the nervous system except cesium, and none of them affect the pulmonary circulation except silver.

The value of Blake's studies is to show us that in every matter we possess a reagent capable of aiding us in our investigations upon the molecular properties of substances.

Blake's observations that silver acts upon the lungs locally thus impeding the circulation, had found other champions, but as Rouget has pointed out, the arrest of respiration is central. This observer found that lesions in the lungs after the death of animals were extremely rare, while in all there had been pronounced disturbances of respiration in life. Charcot and Ball, in 1864, made a number of experiments using a silver salt which would not coagulate albumin. This point is important, for on injecting the nitrate, for instance, directly into the circulation, the blood would be coagulated and thrombi formed, thus vitiating the effects of the experiment, from the difficulty of separating the effects of the thrombi from those

of the silver. Orfila's earlier experiments were open to this objection.

Using then, a salt of silver which did not coagulate albumin they observed respiratory embarassment and sudden paralyses of the posterior extremities. Their conclusions, borne out by Wood, were that both the asphyxia and pulmonary trouble were central. Experimentors have failed to find any pathological condition of the blood following the administration of silver.

One of the objections to the long continued use of the drug is the danger of a peculiar, bluish slate color staining of the tissues which may take place especially in the exposed portions of the skin, as the face, in the sweat and sebaceous glands, glomeruli of the kidney, plexus chorion of the brain, the interna of the aorta and the lymphatic glands of the mesentery. Parts of the skin exposed to the light stain first. When the salt is applied to the conjunctiva the staining appears there.

The staining is probably due to the precipitation of minute particles of silver, and in addition an oxid of silver is also formed.

The cutis vera of the skin is the part in which the pigment is found.

Owing to the slowness of elimination of the drug, we must be careful before administering it to inquire whether the patient has ever taken silver before, for the exact dose which must be taken to produce the discoloration differs for different people. Harmack says that thirty grams at least must have been taken. It is to be remembered that the disfigurement is to be avoided since the stain is a permanent one.

Notwithstanding the fact that careful observers, such as Heller and Orfila, have failed to detect silver in the nrine, it is probably eliminated very slowly and in small quantities by the kidney, more quickly by the bile in albuminous solution. It is found in the feces as silver sulphids.

With further reference to the therapeutic indications for the employment of silver:—

It is especially in certain gastric and enteric conditions that its internal use proves of undoubted value. Based upon its physiologic action the rationale of its use in gastric relaxation and dilatation, ulcer, and erosions is understood. Yet as Boring has pointed out, we are utterly unable to say why its employment in true cases of gastric neuralgia, it should prove of use by its mechanical action alone, unless it produces some sedative action upon the gastric nerves. We do not know how this is brought about. In certain chronic diarrheas of adults silver is often found to be the only drug which will give relief.

The writer was led to the choice of this subject on account of the gratifying results the use of this drug has afforded him in the mucous colitis of adults, gastric dilatation, and the persistent zymotic diarrheas of children.

The cases of chronic mucous colitis, often so difficult, and well nigh incurable, will frequently be greatly benefited by the internal administration of the nitrate on an empty stomach, t.i. d., and injection per rectum, night and morning, with a solution of the strength of grams xxx to the pint. In addition to this treatment, dietetic directions must be closely carried out. Permanent improvement will frequently follow persistence in this treatment.

In the zymotic diarrheas, regulating diet, giving divided doses of calomel to cleanse the alimentary tract, and high injections of solution of nitrate of silver, gr. xx to the pint, through a soft rubber catheter, will be found of great advantage.

In 1828 Higginbotham advocated the employment of a solution of the nitrate to erysipelatous areas and the plan has had many supporters. It is claimed that the inflammation can be localized and disfigurement largely avoided. Much more deserving of remark is the practice advocated by M. Boudin as early as 1836, and later by the elder Mitchell and William Pepper, to use the drug in typhoid fever with a view to its curative influence upon the ulcerations of the Peyer's patches. Bordin administered the drug by the mouth or rectum, or both.

Silver was long recommended for the treatment of epilepsy and allied organic nervous diseases. It is not surprising that in a disease, in the course of which long intervals separate the attacks, should a period of improvement follow the employment of a certain drug, the change in the patient's condition should be attributed to that drug. This is doubtless why silver was thought to help epilepsy. It has now

passed out of general use as a remedy in this disease.

The one great use of silver in nervous affections, which is by far the most important, remains to be considered: that in locomotor ataxia. While Mitchell, Charcot, Graves, and other great neurologists confirm the judgment that no fully diagnosed case of posterior sclerosis has ever recovered, yet the knowledge of any influence which will alleviate the terrible sufferings of the patients and make their lives more bearable, is to be hailed with joy. The same general tendency to long periods of arrested development of the sclerosis, leading to a remission of any symptoms must be borne in mind (as in epilepsy) in order to judge whether a drug has proved of value. Wunderlich, in 1861 (in Leipzig), accidentally discovered the improvement of tabetic symptoms in a patient who was taking silver internally for chronic diarrhea. He, therefore, began to employ the drug in tabes and with most encouraging results, which have been corroborated by Charcot, Velpeau, and a host of others. There is a masterful article on tabes dorsalis in the Twentieth Century Practice, by Möbius, of Leipzig, which one cannot read without conviction of its truth. He says: "the treatment of tabes is painful and touching. It shows us on the one hand how weak human judgment is, and on the other hand, how much faith man possesses. New methods of treatment are constantly invented and all are of benefit so long as they are new, but in time all lose their virtue and are quietly cast aside. * * * We may say that to-day all well informed physicians are agreed that there is no cure for tabes, that all reports of cure are mistaken. * * * Still, cases are reported in all methods of treatment, in which it is difficult to believe in chance, cases in which after a long, unchanging course of disease a distinct improvement commences immediately after the institution of the new treatment. Since such curative effects are attained by all methods the reasonable as well as the unreasonable, but an explanation remains, to wit, that here as well as elsewhere it is not the remedy but the patient's belief in the remedy that benefits. Indeed, tabes is a conspicuous example of the fact that even affections which are apparently due to organic lesions may be influenced by faith. More correctly we should say that experience derived from tabes shows that, even when organic lesions exist, a considerable part of the disturbance of function are of a physical nature, for no one can intelligently assume that degenerated nerve fibres can regenerate themselves under the influence of faith. If the latter removes disturbances it must be that these disturbances do not depend directly upon the degeneration but are the accessory affection which the patient has suggested to himself, which anxiety, fear, and despair have added to the principal affection." He uses silver, bearing in mind these facts, but does not believe in its curative properties. However, by general consent it is the only drug that is of any possible benefit in a tedious, harrowing, chronic disease.

For a long time the oxid of silver was administered internally when the effect of the drug upon the nervous system was needed. It was thought there was less danger of argyria than when the nitrate was employed.

There are many preparations of silver used in the arts, but the nitrate, oxid, argentamine and argonin are the only ones in general use in medicine.

Resumé then of the uses of silver may be thus given.

1. Locally upon all inflammation of mucous membranes, especially acute inflammations where an antiseptic, anti-corrosive, superficial caustic is needed. In leg ulcers where the inflammatory reaction is marked—*i. e.*, not in *sluggish* ulcers. In laryngitis, pharyngitis, faucitis, tonsillitis, etc.

2. Locally painted over furuncles, felons, etc.

3. In the summer diarrheas of infants by high injections.

4. In dysentery, mucous colitis, enteritis and gastro-enteritis, and typhoid fever in adults combined with internal administration of the drug.

5. In the stomach, in ulcer, erosion, dilatation, acid dyspepsia, nervous gastritis, etc.

6. In the nervous system in tabes dorsalis.

Internally administered the nitrate is best given before meals combined with opium or simply gum tragacanth.

CONTRIBUTION TO THE STUDY OF MELANCHOLIA, WITH REPORT OF A CASE.

A. P. STONER, M.D., CAINSVILLE, MO.

Melancholia is perhaps the most common form of mental disorder the general practitioner is called upon to treat. Three types are recognized: Melancholia simplex; melancholia attonita, and melancholia agitata.

The chief characteristic of the disease is melancholy, in which there is predominance of subject-consciousness, with weakening or loss of inhibition and failure of object-consciousness. This may obtain to the degree of actual delirium or of stupor. Simple melancholia may merge into one of the other forms. Indeed, at one time or another a case may present the cardinal symptoms of all forms of the disease. Many cases of terminal dementia begin with melancholia.

Hereditary taint is a factor in nearly all cases of melancholia. This does not necessarily mean a history of insanity in any member of the family-group, but that there is a disposition or predisposition to mental unbalance, or a weak inhibitory function, which may render pathologic invasion easy. It may be merely a tendency to mental enfeeblement inherent in the parents which never developed into actual disease. Simple cases of melancholia may run such a masked chronic course that it would be difficult to detect an altered condition of mind. Severe mental worry, close application to study, especially at the age of puberty, may serve to light up a dormant morbid mental condition. Alcohol especially predisposes to mental diseases, as, to a less marked degree does also hysteria and phthisis. Careful search into family history seldom fails to reveal an ancestral defect, a weak spot, somewhere. Uterine diseases in women and prostatic diseases in men are said to be exciting causes, insomuch as they may cause worry and anxiety. Poisoning from certain substances, such as lead, may produce melancholia. Other causes might be mentioned as exciting agents in producing the disease. I have in mind a young man who committed suicide by shooting, a result of simple melancholia caused by being compelled to marry a young lady with whom he had been unduly and unfortunately intimate. Any morbid condition of the body which may harass and torture a sensitive mind may lead to melancholia. Devey believed that dilatation of the stomach may produce alienation in those predisposed to insanity; Leube and others report cases of melancholia suffering with this malady, and my own experience leads me to concur with this belief.

Our knowledge of the pathology is meager and unsatisfactory. Whitmore Steele examined the blood in 35 cases, and found almost uniformly a diminution of the corpuscular elements and hemoglobin. Much improvement will be required on the present methods of examination to disclose the true pathology. Kirchoff believes that manifest pathologic changes are present in only a limited number of psychoses.

Cases of melancholia may begin so gradually that neither the family nor friends are able to detect the beginning. The patient himself may be the first to call attention to his discontent. He begins to lose interest in the things which formerly claimed his attention most. It is noticed that his ideas run a slower course; he complains of a sense of weariness and ill-being, develops a distaste for society and intellectual pursuits, and loses all interest in his occupation. He feels some calamity is about to befall him, and dreadful fear takes possession of his mind. He sighs, mutters and moans to himself as time drags wearily on. The pleasures of life fade; the world seems dead, and his surroundings and associations seem changed. In consequence of these morbid fears and delusions he seeks seclusion, becomes silent, morose and indifferent, and imagines himself undeserving the care of friends. To him there is nothing either in this world or the world to come but eternal damnation. If he

has had religious training, he finds something in his past life to associate with the "unpardonable sin against the Holy Ghost;" sentence has been pronounced, and he feels himself doomed to everlasting punishment. He no longer desires to live, he is too wicked; voices threaten him and bells toll his death-knell. Life's drama has been played, death will close the scene, and death is the only theme for his thought. Why should he live when all else is dead? Why prolong miserable existence? And, secretly he plans to end his life. His existence is purely automatic, his expression that of abject despair.

In melancholia with stupor the patient behaves more like a statue than a living being. Whether standing or sitting he is contented with his position. His bladder becomes filled but he has no desire to micturate. The bowel becomes loaded with excreta but it disturbs him not. Saliva trickles from the mouth without notice. He refuses to answer questions or to speak even a word, though his eyes may fill with tears if his condition be discussed in his presence. His movements are sluggish. He takes food as if with disgust. He is unable to dress or to undress himself. He will lie awake all night with open eyes, brooding over his miseries, perhaps weeping silently. If he falls asleep he is tortured with dreams. The tongue is coated, the skin dry and pulpy, and the breath is foul. The conjunctivæ are injected, digestion is impaired, constipation is frequent, sexual desire is abolished, and, in women, menstruation is disturbed. The face and hands are swollen, and the feet cold and moist. Such is the picture of melancholia with stupor, as it is usually seen.

Melancholia in any form usually runs a protracted course of months and even years, with the liability to acute exacerbation. A mild case may run so slight a course that the family ceases to attach importance to it. But it is a fact not to be lost sight of that in these cases a sudden attack of precordial fear may precipitate an attempt at suicide. Melancholia may become chronic and the patient may be able to follow some sort of occupation. On the other hand, some cases maintain their violent character, and again, the stupor may last for years or until death extinguishes the last glimmering spark of mechanical existence.

Every physician should be able to diagnose mental disorders in their incipiency. In the event of doubt a specialist should be consulted, for the successful management of any psychosis lies in the early treatment. It is difficult to properly appreciate the success obtainable when cases of insanity are recognized at their beginning. Nearly all cases of mental infirmity first fall into the hands of the general practitioner, and on him lies the greatest responsibility. The family should be made to realize that the conduct of the patient is the result of a morbid depression; that he is to be treated as any other sick person, and that at the outset, mental and physical rest must be obtained. It may not be necessary to place the patient in bed, but all active exercise, mental and physical, must be interdicted. He should be placed under the care of a good nurse. Since few families are prepared to carry out the treatment necessary at home, the patient should be transferred either to an institution or to a private family abroad, where he can be under the care of a competent physician. The earlier these arrangements are made the better the effect. Change in environment militates toward a successful issue. The writer does not favor sending melancholia patients to public insane asylums where they may be brought in contact with the classes usually inhabiting mad-houses. The best results are obtained by placing the patient in a private family, under the care of a responsible companion who should remain with him day and night. Failing in this, there are numerous well regulated private hospitals for the treatment of mental diseases in which patients receive suitable home-like treatment. Most cases of melancholia with stupor, especially in the convalescent stage, need to have their time occupied, which, of itself, requires the full attention of a competent and agreeable companion.

If the patient can not be sent away from home, he should be vigilantly guarded against suicide.

While rest is an essential factor in all melancholia, especially in the beginning, those cases representing the immobile type should be given more or less exercise,

especially during convalescence. The bowels should be moved every day, and a light diet prescribed, consisting principally of milk, soft eggs, beef juice, brandy, etc.

A number of remedies have been highly lauded for all forms of melancholia. For instance: Opium in the form of the aqueous extract, first suggested by Gray. Cannabis indica, morphin, the bromids, and more recently kolo-nut have been given. The writer is inclined to think, however, that much of the vaunted improvement from these preparations is more imaginary than real. Trional is perhaps the best hypnotic when sleep is disturbed. It seldom fails to produce quiet, refreshing sleep. It should be given in fifteen-grain doses at bed hour. The dose should be repeated after two hours, if occasion demands. Some prefer sulfonal in twenty-grain doses. Especial scrutiny should be made to ascertain whether sleep is disturbed or not; patients will feign slumber many times, and go for days without sleep. Strychnin and quinin may be given for their tonic effect. In case of suppression of urine, the citrate or acetate of potassium may be given in large quantities of water. It may be necessary to treat the disordered stomach; hydrochloric acid or alkalies usually act well in controlling fermentation. Peterson has recently called attention to the value of forced feeding in melancholia, meals being given every hour or two in conjunction with rest. Generally speaking supporting treatment is indicated in all cases of melancholia.

The following case will serve to illustrate some conditions found in melancholia with stupor: W., a robust school boy, fifteen years old, bright and intelligent, while in his room writing, October 16, 1895, suddenly became alarmed and excited, went down stairs, awakened his parents and told them he felt queerly, that he was scared and couldn't breathe well, and urged them to call a physician at once. I saw him a few moments later. He was more quiet but retained a very anxious expression. He told me that he was scared at something, he knew not what. He had not seen or heard anything. He complained of an oppressive sensation in his breast (precordial fear), said his heart didn't beat right, and that he couldn't get any air into his lungs. I found the heart-beat somewhat accelerated both in force and frequency. He had been in perfect health until the moment of the attack, and I concluded that he had been dozing and was perhaps the subject of a temporary delusion. I prescribed nothing and assured the family that there was nothing seriously the matter. The next morning he attended school as usual, but returned at noon. He complained of being chilly and appeared somewhat restless and anxious. The morning of the 18th he was decidedly worse, and again complained of rigors. I was called and found him seated in a chair. I had scarcely entered the room when, with an anxious, inquiring, and eager expression, he said: "Doctor! What's the matter with me? I feel so funny, so queer and lonesome, etc." The heart's action was accelerated, temperature 101°. Believing there was malarial complication, I ordered five-grain doses of quinin to be given every four hours. The morning of the 19th, his condition was markedly worse. The heart's action had become irregular. It was beating at the rate of 110 per minute, and a distinct mitral murmur was heard over the apex. This, however, I thought to be only functional, as afterwards proved to be the case. It was at this time his mind first became perceptibly affected. His countenance began to change and to assume a moody expression. He remarked a number of times, "that something awful was about to happen; that he was going to be taken away from them." He told his mother he had "always thought she would die before himself but a great change had now come, and he was soon to bid them all good-bye." That night he became frightened, went to his father's bed in an adjoining room and told him he was afraid to sleep with his brother. He had heard strange noises and had seen a coffin. On the 20th inst., the heart murmur had lessened, but the pulse and temperature were still unabated. He complained of headache. The eyes were suffused and discs choked. The drum membrane was slightly injected. The kidneys had ceased to act and the bowels had become sluggish. The next day the temperature had fallen to 100° F. and the pulse was less frequent.

The condition remained thus unchanged for four or five days, during which he was subject to frequent delusions. He imagined that certain boys (companions) had done something awful—the secret he would not tell—and had accused him of the act. He moaned to himself and declared that he would get even with them some day. He would ask for pencil and paper and write legible notes to a young brother, as follows: "—— —— was the very lad who did it and tries to lay it on me." He took interest in many things and at times asked numerous questions.

After six or seven days his condition began to improve, and at the end of twelve days he was so much better that he was allowed to do light work. In company with his brother, he was allowed to go about at leisure, and to all appearance had recovered his usual good health, both mental and physical. He had been a very close student at school, and I was led to believe that this conduced largely to the cause of his trouble. I thought it prudent to keep him from study, and therefore advised light employment in order to occupy his mind. At my suggestion he was also deterred from attending Sunday-school and church, as had been his custom. He improved rapidly, became jovial and gay, and was desirous of re-entering school.

November 3 he retired somewhat ill-humored because told that he must not enter school the next morning. He had been in his room only a short time when he came down stairs looking uneasy and apparently in a deep study. He was persuaded to return, but he did not sleep well that night. Next morning he appeared stupid, and cried for one or two hours. I saw him and found all the former mental symptoms precipitated. His breath was foul, pulse slow, and pupils dilated. His bowels and kidneys inactive, there being no voluntary action from either. In a few hours he had passed into a condition of profound mental apathy, his vocabulary reduced to the words yes and no. He lost all interest in life, and appeared to exist in a world of his own. By November 6 he had become absolutely aphasic, his condition remaining unchanged for about three weeks.

During this time the temperature was always below normal, and the pulse rate rarely more than 55, and fell so low as 45 per minute. His face lost every vestige of expression. He was unable to dress or to undress himself, and would sit or stand motionless, not seeming to tire in any position. At night he would lie motionless in whatever position he chanced to assume, his eyes wide open and fixed upon the wall. The tactile sensibilities were blunted. He swallowed with difficulty and seemed to have lost the sense of taste. He took Epsom salts apparently with the same relish as food. There was drooling and slobbering, but if given a handkerchief he would slowly and deliberately endeavor to clean his mouth. The pupils reacted sluggishly. He walked in a slow, dragging manner, but would quicken his steps if told to do so. The reflexes were exaggerated. The treatment was purely symptomatic. Strychnin was given in 1-50 grain doses, t. i. d. and he was kept on a strictly liquid diet, consisting principally of milk, beef tea and whiskey with yolk of eggs.

A number of noted physicians and specialists examined the patient, and November 20 he was transferred to a private family at a distance and placed under the care of a competent physician. During the trip he manifested no interest whatever. In the hotel lobby, or on the crowded train, he was the same indifferent, passive, unobserving individual he was at home. Closely questioned by his new attendant, a physician whom he had never before met, with much difficulty he answered one or two questions.

He was placed in the company of a young man who remained with him day and night, and from this time his improvement was regular and rapid. He was given aq. ext. of opium; the strychnin was continued; and sulfonal was given in fifteen to twenty grain doses at bed hour. By December his condition had improved to the extent that he made many voluntary remarks. During the time he was most inactive he was walked around, and was allowed to play at different games as he desired. He continued to improve rapidly; was brought home January 29, against the advice of his physicians, but he was kept under the care of his companion until March, 1896. He is now working on a farm and is in perfect health. He retains the memory of every

event which transpired during his sickness.

Points of special interest are: 1. Sudden onset. Nothing unusual had been noticed in the patient's action previous to the attack.

2. Apparent complete recovery in ten days.

3. Sudden relapse after short period and in a form different from that of the first attack.

4. Rapid and complete recovery as soon as home environments were given up and patient placed among entire strangers.

5. Family history entirely free of insanity, inebriety or alcoholism. The boy and other members of the family are above the average in intelligence.

CURRENT LITERATURE CONDENSED.

Certifying Lunatic Patients and the General Principles of Treatment.[1]

Medical men in active practice frequently experience considerable difficulty in certifying patients as being of unsound mind, and requiring detention in an asylum, on account of not having had opportunities of becoming practically acquainted with the different phases of madness. Consequently it is not too much to say that lives are annually lost through timid and faulty diagnosis. Not only are the lives of patients thus lost, but also sometimes those of their friends through the diagnosis of insanity not being completed until some visible disaster has occurred.

As a rule, medical men in general look for some outstanding delusion, as their chief guide in framing a diagnosis. Yet, that may be difficult and sometimes impossible to elicit.

To certify that a patient is of unsound mind may be an easy matter in some cases if the signs and symptoms of his madness are conspicuously present—*e. g.*, the patient may be raving mad. Again, it may be most difficult to do so if the patient has lucid intervals in his disease, or if he be a monomaniac with fleeting delusions or with delusions difficult to elicit.

It is necessary not to confine oneself in the investigation to the mere presence or absence of marked delusions. There may be homicidal or suicidal tendencies, or attempts may have been made in these directions. There may be hallucinations of sight and hearing present, but these symptoms are chiefly to be found in acute cases in which the diagnosis is least difficult.

In a general way, it is well to begin by ascertaining if the patient is suffering from any acute form of mental disease. Monomaniacal and epileptic forms of insanity will occasionally offer difficulties. In epileptic insanity we must search for evidences of violence, defects of speech, confusion of ideas, etc.

Again, there are some forms of insanity where, instead of perversion of the mental faculties, we find defects. If a man in fair bodily health will not work, being defective in mental energy or will power; if he persists in lying in bed all day for weeks or months, and harbors hypochondriac notions about himself and shows no signs that he feels himself a responsible creature, he is clearly of unsound mind, and may be certified as such and as requiring supervision by others; but the wording of the certificate may be troublesome to an unpractised hand. The facts —that a patient "cannot do" for himself, and is heedless and regardless of himself and his neighbors; or is incompetent mentally to guide himself, being foolish and rambling in speech and silly in conduct; or is unduly irritable, impulsive, and aggressive; or listless, apathetic, and confused in mind; or morbidly suspicious and homicidally inclined; or restless, incoherent in speech, and disorderly or defective in mind, with loss of memory and childish in disposition—are all of great importance in framing a certificate of madness.

In approaching a patient supposed to be of unsound mind one should exhibit no trace of nervousness, especially if the patient be suffering from maniacal excitement; but keeping one's wits about

[1] JOHN T. MACLACHLAN, M.D., in *Edinburgh Med. Jour.*

him, interview the patient with some degree of boldness and confidence. With morbidly suspicious patients it is best to be frank and courteous, and investigate the mental condition from a variety of standpoints, so that if the patient's mind be lucid on most things, his weak points will be detected—*e. g.*, delusions of a religious, amatory, and financial nature, etc.

Principles of Treatment.—In treating cases of insanity there are certain general principles of treatment that should be kept steadily in mind. If the disease be acute, attended with maniacal excitement, it is obvious that all sources of irritation should be as far as possible removed, in order that the disordered brain may get as much rest as possible. Consequently, in such cases the patient should be kept in a quiet chamber, free from the excitement of noise and social intercourse with his neighbors. Cleanliness, abundance of fresh air and light, with suitable nourishing foods, are all important. Sleep should be secured by as much out-door life as possible, if the patient's strength will permit of his being in the open air. It is well, also, in all cases to remove the patient from the surroundings under which his madness developed. Consequently, asylum treatment is requisite in most cases, especially where expense is an object of concern. The mad ideas which trouble and torment the mind must be dispelled by endeavoring to supplant them by healthy ones.

Discipline which consists in the regular discharge of duties should be a prominent factor in treating cases of madness. Healthy habits are thereby secured, which are in themselves powerful aids in the cure and powerful weapons in prophylaxis. The will power in all cases of insanity is more or less impaired, and stronger wills must guide the weaker ones. Consequently, the strength of character of the physician is of the highest importance, and in proportion as that obtains so will benefits to the sick follow. In dreamy and vacuous states of mind rousing treatment is necessary. An idle brain is bad for the sick as well as the healthy, except in very acute cases of illness. Active manual pursuits are valuable in dispelling soft and listless states of the mind. The emunctories of the body should be kept well open, as retention of waste products in the blood is perhaps the most powerful factor in the production of melancholic and depressed states of the mind. This implies the judicious use of baths, aperients, diuretics, cholagogues, and exercise in the open air. When to soothe and when to stimulate the brain is the crux of most of the mental treatment.

Dietetic treatment is of great consequence. We know that nitrogenous foods are necessary for repair of tissues, and that the fats and starches and sugars are chiefly heat and force producing foods. Advantage should be taken of this knowledge in administering abundance of nitrogenous foods to repair the wasted and recruit the devitalized forms of many lunatics. In acute diseases we must be content with liquid foods for the most part; but a free use of nitrogenous foods would, I am sure, in a large measure supply the one thing needful in not a few cases of chronic insanity. Even a free allowance of tea, bread, and potatoes will scarcely make any material difference in the weight of many chronic lunatics, while an egg custard daily will often increase their weight perceptibly in one week.

I consider three good nitrogenous meals daily absolutely necessary to get the best results. In my experience, both with lunatic and non-lunatic patients, health and strength and weight are best obtained by increasing the proteids rather than the carbo-hydrates in the diet. The uric acid theories of gout seems to have cramped our notions of the value of nitrogenous foods in treating chronic diseases.

A problem that frequently arises is how to break recurring mad habits. Many patients get well for a time, then relapses take place. It seems to me that, if the diet were properly looked after, as above indicated, a great advantage would be got towards preventing recurrent attacks. Disease and weakness go arm in arm, not disease and strength. Maniacal excitement is an indication of brain weakness, not of brain strength. Then, of course, discipline which fortifies the mind and increases will-power and strengthens inhibitory action is likewise a powerful aid. Further, certain medicines by bracing the system may be of service—*e. g.*, arsenic, iron, strychnin, phosphorus, and quinin, along with cod-liver oil and malt extracts.

Other medicines, by diminishing reflex irritations, may be advantageously employed—*e. g.*, the bromids. Thus, one patient who had scarcely slept any for months, when put on full doses of potassium bromid every few hours during the day, got back the habit of sleeping in the course of a week or two.

In recurrent mania the patient should be secluded on the first indication of an attack, and quiet and rest enjoined to body and mind.

Smart purgation, *e. g.*, by croton oil (two minims), lessens maniacal excitement, possibly on account of its exhaustive effects, but I also think on account of its derivative action on the brain.

Frequently one has occasion to feed patients by the stomach tube. To do this skilfully requires some knack. It is pitiful to see a bungling hand torturing a patient in attempting to pass the tube into the esophagus. A good plan is for an attendant to sit on a chair, with the patient sitting on the floor with his back to the attendant and partially clamped between his knees, his arms likewise being secured. The mouth is then gagged, and the tube lubricated with soap. Two fingers of the left hand should be placed over the tongue of the patient. The tube should then be conveyed to his mouth, and passed over the fingers to the back of the pharynx. If the tongue be now well depressed and slightly pushed forward, the tube will readily pass if urged onward and slightly to one or either side, so as to avoid the epiglottis. When the tube has well entered the esophagus the fingers of the left hand may be slightly relaxed, in order to give the patient a breath or two. If any difficulty be experienced, one of the fingers on the patient's tongue may guide the point of the tube, when it will be readily passed. When the tube is passed the rest of the steps in feeding is quite simple.

Eyelid Symptoms in Graves's Disease.[2]

The two chief abnormal variations in movements of the eyelid are von Graefe's sign—the eyelid descending not synchronously with the descending globe, but more slowly and it may be more jerkily, and Stellwag's sign, consisting in retraction of lids and consequent increase in the width of the palpebral fissure. This retraction is most obvious in the upper lids, and is frequently associated, as is seen when the patient's gaze is directed downwards, with a cupping of the lower lid. Both these signs are quite independent of exophthalmos, and their clinical value is difficult to estimate. They are neither constant nor pathognomonic, and are variable even in the same individual.

Von Graefe ascribed the deranged movement to spasm of the fibres of Müller. More recently Ferri has advanced the theory that the retraction of the lids is the result of the mechanical shortening of the levator palpebræ due to the increased volume of blood-vesesls distributed in its substance. Maude is of opinion that such an explanation might be true in a few outstanding cases, but could scarcely be so in all.

Two theories are open as an explanation—viz., that the conditions are due to spasm of the raising muscles or to paresis of the orbicularis. That irritation of the sympathetic can produce retraction of the lids was shown by Remak's experiment, and is further demonstrated by the action of cocain as an irritant of the terminations of the sympathetic. Two difficulties present themselves with regard to accepting irritation of the sympathetic as an explanation, first, that this irritation does not affect the iris or ciliary muscle, both of which react very readily to external stimuli, and secondly, that the phenomena of retraction of the lid and impaired movement, although often variable, may be constant for long periods—a condition scarcely likely to be the result of irritation.

On the other hand, it is stated that the orbicularis and other upper facial muscles is almost constant in Graves's disease. This group of muscles as regards its nervous supply is closely connected with the oculo-motor nucleus, and it would thus seem that the eyelid symptoms in this disease are intimately associated with changes in the third nerve nucleus.

This paper gives an interesting and comprehensive statement of the varying explanations offered in reference to the movements of the eyelids, and the author himself evidently leans to the last-men-

[2] MAUDE in *Edinburgh Med. Jour.*

tioned theory—viz., an affection of the oculo-motor nucleus and a consequent paresis of the upper facial group of muscles. But it might be objected to such an explanation that if, as is stated, this group of muscles is almost constantly weak, the movements of the lids should also be constant, and, as is well known, this is by no means the case, so that perhaps a satisfactory explanation for all cases is not yet forthcoming.

Immunity.[3]

The manner in which the living organism protects itself against the ravages of pathogenic bacteria and their poisonous products is one of absorbing interest to the progressive practitioner. While the brilliant researches of Metchnikoff have established the doctrine of phagocytosis upon a firm basis, it cannot be denied that it fails to explain a certain number of facts which are better accounted for by the humoral theory, of which Pfeiffer is one of the most ardent and distinguished supporters.

The study of the so-called antitoxic serums shows that they fall in two groups: (1) Those which are truly antitoxic—that is, neutralized microbic poisons; (2) and those which are bactericidal in their action.

Wassermann has made an important contribution to our knowledge on this subject. He succeeded in obtaining from cultivations of bacillus pyocyaneus a serum possessing both these functions to a marked degree, and also serums possessing one or the other property at will. He found that an animal treated with toxins was protected against both toxins and bacteria, while one treated with bacteria was immune as regards bacteria only. He further showed that minimal immunity could be produced by the injection of a single dose of toxin, insufficient to cause severe symptoms, the amount of immunity varying mathematically with the quantity of toxin injected.

In passive immunity the author immunized a goat in various ways, and showed that the properties of the serum varied with the method adopted. In increased doses of toxin, the serum possessed both the antitoxic and bactericidal properties to a certain limit.

These two properties, while indistinguishable in their behavior by chemical reagents, are different in nature. One may be a powerful bactericidal agent without possessing antitoxic properties.

Wassermann made use of the fact that the virulence of pyocyaneotoxin is but little diminished by a temperature of 100° C. to solve the question as to whether the antitoxic serum really destroys the toxin, or simply rapidly immunizes the animal against it. The latter was shown to be the case by the result of boiling the mixture of pyocyaneotoxin and serum, which was found harmless to animals.

Gynecologic Uses of Ichthyol.[4]

Ichthyol, employed as a vaginal application and in inunctions on the abdominal wall, has an analgetic action that shows itself from the first application. This action is never absent, and becomes more pronounced if the treatment is persevered in.

To the purely symptomatic and subjective effects may be added its antiphlogistic action. The numerous cases in which this treatment was employed by the author differed greatly as regarded their gravity and the duration of the affection, so that the results obtained were not always identical. In a general way, under the influence of repeated ichthyol applications during a variable period, inflammatory lesions of the adnexa, of the peritoneum, and of the pelvic cellular tissue had a marked tendency to resolution. The adnexa diminished in size and regained their mobility, and at the same time they became less sensitive to pressure. The pelvic exudations became absorbed and the vaginal vault gradually regained its normal flexibility. In cases of slight or medium intensity, recent recovery was nearly always obtained in from three to four months, without being obliged to resort to any other mode of treatment; the patient was also able to keep up her daily occupations. In the graver cases which are complicated by acute or subacute attacks of inflammation of the peritoneum or the annexa, a very marked amelioration was always obtained by employing revulsion on the abdomen and rest in bed in addition to the ichthyol treatment. In

[3] Wassermann, *Brit. Med. Jour.*

[4] Lorain, *N. Y. Med. Jour.*

old salpingo-oöphoritis complicated with sclerous annexal peritonitis intravaginal compression practised with saturated ichthyol tampons, associated with massage, gave excellent results.

Among the patients observed by the author there were many who suffered from an inflammatory lesion of the neck of the uterus, and some presented symptoms of elytritis; these patients appeared to be greatly benefited by the application of ichthyol.

Administered by the digestive tract, ichthyol favored the digestive functions by its tonic action on the stomach; it raised the arterial tension, and thus contributed to favor the absorption of the pelvic exudations.

The author concludes that, on the whole, ichthyol, owing to its analgetic, antiseptic, antiphlogistic, and resolvent actions, may render real service in gynecology if its employment is judiciously associated with other therapeutic measures, according to the indications.

The New Tuberculin.[5]

In spite of the great expense of Koch's new preparation, T. R., a constantly growing number of valuable reports are coming in, chiefly from the German clinics. It is clearly evident that a very much larger number of observations, and extending over longer periods of time, must be made before we can arrive at any definite conclusion as to the efficiency of the new remedy. Nevertheless, certain evidence of value is already at hand.

Professor Doutrelepont, of Bonn, gives a list of fifteen cases suffering from lupus and treated by the new method. In the treatment of these cases the directions as given by Koch were followed as closely as possible, namely, to begin with an injection of one-five-hundredth of a milligramme of the preparation, with a gradual increase of the dose about every second day, care being taken to avoid an elevation of more than half a degree in temperature. Doutrelepont found that higher temperatures than desirable were often induced, even by a gradual increase of the dose. In general he made it a principle never to repeat the injection until increased temperature had entirely disappeared.

From his experiments he concludes with Bassenius that the age of the T. R. is probably of influence in relation to elevation of temperature. The largest dose used in this series of cases was four milligrammes, being the thirty-eighth injection. In addition to the rise of temperature, in certain cases headache, lassitude, vertigo and sensory disturbances in the limbs were noted. In general the patients increased in weight during the treatment. The injections were usually well borne. There was an occasional complaint of pain at the seat of injection which often showed some infiltration. The diseased area showed a comparatively quick formation of skin over the ulcers. The hypertrophic lupus, in a measure, disappeared, and scar tissue took its place. The swollen lymph glands decreased in size during the treatment; some, however, suppurated and demanded incision.

Dr. Bruno Leick reports a series of fifteen cases of lung tuberculosis in which the new tuberculin was used. At first the back between the scapulæ was used as the point of injection, which was later changed because of the pain occasioned when in the lying position. Of the fifteen cases treated a decided improvement was noted in but two, and in these the suspicion is raised that an equally good result might have been attained under the ordinary routine treatment.

Professor Rumpf approaches the question of the therapeutic value of T. R. with an equal or greater scepticism. Rumpf found that the injection in most cases was painful and frequently followel by an inflammatory infiltration of the skin. A case of interest is one in which Koch's maximum dose (twenty milligrammes) was injected without temperature reaction. Later, however, a marked rise of temperature came on, much like that noted in the use of the old tuberculin, the outcome of which for the patient must be regarded as ominous. Rumpf reports a number of cases, both favorable and unfavorable in their course, and concludes:

1. The new tuberculin, in doses as recommended by Koch, frequently causes painful inflammatory infiltration of the skin which is slow to heal.

2. By gradual increase of the injected dose it is possible to reach the maximum dose with but slight reaction, but it does

[5] Editorial in *Boston Medical and Surgical Journal.*

not follow that a more or less serious fever may not supervene upon the later injection of a previously well-borne amount.

3. It appears from this that the reaction or failure to react is inconstant under similar conditions.

4. The reaction frequently consists in general manifestations, such as frequency of the pulse, vertigo, pain, etc., as well as in increase in temperature.

5. It is doubtful whether Koch's maximum dose produces immunity in men.

6. Should its immunizing power be shown lacking, the advantage of the new tuberculin over the old would consist merely in containing more toxic substance.

7. It is desirable to proceed with much caution in primary and localized tuberculous processes of the lungs.

It will be seen that Rumpf's attitude is one of extreme scepticism.

Following the report of a case of acute tuberculous inflammation of the middle ear during a new-tuberculin treatment, Dr. Richard Müller, of Berlin, warns us of the possible danger of the preparation, inasmuch as in his case there was some evidence to show that the process in the ear was rendered more active by its use.

Dr. Herzfeld, of Berlin, furnishes a report of the treatment of seven cases of larynx tuberculosis. Here, again, results are discouraging, since in but one case was a decided improvement noted as probably due to the use of tuberculin. The opinion is expressed that in all the other cases more would have been accomplished by the usual local treatment. In any case, Herzfeld rightly maintains that whether or not T. R. be used, local treatment should never be omitted.

Dr. Baudach, the directing physician of a sanitarium for tuberculosis, was extremely careful in the choice of patients and in his system of injection. Twenty patients in all were treated, most of them suffering from tuberculosis of the lungs. Excepting for slight symptoms, such as those already alluded to, there was for the most part no evil effect from the injections, nor was there a single case of abscess formation. He reports at considerable length twelve cases in which the treatment might be regarded as entirely or almost entirely completed. As a result of his observation of these cases, he arrives at a much more hopeful judgment of the working of T. R. than those previously expressed. He found the treatment in general to be followed by decidedly good results and productive in a number of cases of a more rapid improvement than would otherwise have been the case.

It must be remembered that these patients were under the most favorable possible conditions for improvement; nevertheless, a careful reading of Baudach's paper leaves the impression that, apart from the favorable surroundings, a distinctively curative action is to be attributed to the tuberculin.

So far as it is possible to draw conclusions from the various cases to which allusion has been made we may say, first, that the new preparation has proved itself decidedly useful in lupus and probably of limited specific action in visceral tuberculosis; and, secondly, that at present it should be employed in conjunction with other recognized methods of treatment.

Is Salt a Necessary Condiment? [6]

It is somewhat remarkable that, of all the many nutritive salts contained in our food, only one, kitchen salt (sodium chlorid) is deemed by most people to be present in insufficient quantity, wherefore they add inorganic mineral kitchen-salt as a condiment to what they eat.

It is quite true, however, that our present day physiologists (who generally seek to defend the use of all commonly-used foods and condiments whatever, and furthermore include alcohol and pungent spices amongst the indispensable), maintain that the addition of salt to our foods is absolutely necessary, because the quantity of salt secreted by the kidneys amounts to from twelve to twenty grains daily, and because so great a quantity is not contained in the foods eaten, hence one must apparently supply the deficiency by the addition of mineral salts, unless the body is to suffer for the insufficiency of saline matter. It is stated that the negroes in Africa, who generally cannot procure salt, show an extraordinary desire for it, and that negro children, if given a piece of rock salt by some passing traveller, suck it with delight, just as our European children do sweetmeats. He who

[6] Carl Fehlauer, M.D., in *Food and Sanitation.*

could afford to use salt every day would be regarded as a man of wealth amongst these tribes.

Dr. G. Bunge, Professor of Physiology at Basel, has come to the following conclusions: That on a diet chiefly of animal food it is possible to live without adding salt, and that fishermen, hunters, herdsmen, who live on flesh, fish, and milk, do not salt their food; but that those uncivilized races which live partly on vegetable food, always add salt to it. He gives as a reason for this, that animal foods contain relatively less potash salts and more soda salts; but that in vegetable foods, on the contrary, potash salts are present in much larger quantity, and that therefore it is absolutely necessary to supplement the soda salts by the addition of kitchen-salt. Hence it is that we have a great desire for salt as a condiment for potatoes and pulse, which are particularly rich in potash salts.

In spite of all this, we maintain, and can adduce proofs thereof, that those people who live wholly or chiefly on vegetable foods are not only able, without disadvantage to the body, to dispense with salt, but that by so doing avoid the injurious effects which salt has on the health. Of course, the nutritive salts contained in the vegetable food must not be extracted by unsuitable preparation of the dishes (for instance, by prolonged stewing, or by throwing away the water in which they have been boiled). Indeed the reason why nations living principally on vegetable foods are eager to get salt may be that their manner of preparing their dishes is a false one.

Such washed-out vegetable-foods certainly taste flat, so that salt seems a suitable addition. Flesh-foods, on the contrary, being cooked in only a little water, lose less of their nutritive salts; but the flesh from which beef-tea and such like has been made, and therefore is quite cooked out, tastes no better than the washed out vegetables.

But even the amount of salts which, according to Bunge's view, should be added to vegetable foods is very small, and far less than the usual immoderate consumption which must act most injuriously on our organs, and more particularly on the kidneys. Prof. Bunge on this point remarks: "I must, however, say that the quantity of salt which most people add to their food is far too great. Salt is not only a food, but a condiment, and easily seduces, as all condiments do, to over-eating. With cereals and legumes, for instance, one or two grams of salt per diem would suffice, with rice a few decigrams, instead of which the majority of persons consume some twenty or thirty grams daily, and even more."

But even the small quantity of salt which Bunge thinks necessary is not really required. In fact, just pulse and potatoes (the latter boiled in their jackets or roasted over hot ashes), will be found particularly palatable by those who wish to break themselves from the salt-eating habit, without anv addition of salt whatever. For they are exceptionally rich in nutritive salts as a whole, even though the soda-salts are only present in small quantity compared to the potash salts. The best proof we have that the use of mineral salt is unnecessary, and indeed injurious, is the fact that those persons who have made no use of salt for years have quite an aversion to dishes containing it, even if only present in trifling quantity; whereas if mineral salt were really a necessary food, they should have an intense desire for it. And this disgust for food prepared with salt we have particularly observed amongst vegetarians—that is, people living on a vegetable diet, eating no flesh-meat at all.

In a late issue of the *Journal of Botany* are details of Mr. T. L. Williams' experiments on bees. He says that these insects often get drunk. Their intoxicating tipple is the honey produced by the crowded flowers of the capitulate heads of certain compositae and dipsaceae. When the stage of intoxication is reached it is indicated by rolling on the back, striking the legs wildly in the air and general helplessness. The bees rapidly recovered from the effects, and, in most cases, were eager to repeat the debauch. But one individual manifested the next morning a disgust, raising its head and forelegs as high as it could above the plants, and hurrying away as soon as released. It is suggested that the rolling consequent on their intoxication is a means of distributing the pollen to other florets of the same head.

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EDITOR
HAROLD HAVELOCK KYNETT, A.M., M.D.

ASSISTANT EDITOR
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STAFF EDITORS

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PHILADELPHIA, SATURDAY, OCTOBER 16, 1897.

EDITORIAL.

TO WHAT EXTENT DOES DIAGNOSIS AND PROGNOSIS BELONG TO THE LAITY?

The present discussion has no regard for whatever medico-legal points are involved, and takes cognizance only of matters of ethics and policy.

Many physicians assume that the laity, being unlearned in medical matters, is not competent to attach the proper significance to terms used in diagnosis and prognosis and, therefore, either refuse to share the results of their deliberations with the patient and his friends, or make it a practice to use certain general expressions which have little or no meaning. There is much to be said in favor of such a course. The great majority of the laity cannot appreciate disease except as an entity, and as such want a formal introduction to it, by name. What the name means, it can no more apprehend than one can determine the appearance and mental make-up of a man by his name. However, there is a soul-satisfying sense of tangibility if one knows what to call the stranger. The laity is familiar with a considerable list of disease-names, although it may not appreciate how different in pathology and result two cases of "pneumonia" may be, nor how utterly indefinite is such a word as "dyspepsia." It also takes kindly to modern terms and writes jokes to familiarize itself with the sound, if not the meaning of such words as "locomotor ataxia," "leucocythemia," "neurasthenia," etc. There even seems to be a delicious thrill of mystery about such medical horrors as the laity have become acquainted with.

We do not by any means blame physicians for keeping at the ends of their tongues a stock of glittering generalities with which to satisfy the curiosity of those who are so eager to be introduced to medical secrets which do not concern them. Still, there is the same practical

difficulty which would obtain were one really introducing persons by false names, simply because the one seeking the introduction had no claim for an acquaintance. The attendant may forget that he has denominated hepatic sclerosis as dyspepsia and, later, may call it biliousness; or some other physician may use a term different from the one which his colleague has employed. As a result, it is said that the doctor has admitted that he made a mistake when he first saw the patient, or, perchance, that two physicians, really in perfect accord, have come to serious disagreement. It is quite probable that the popular distrust of the relative knowledge and ability of our profession is due largely to the failure to use exact language in naming disease, or to explain as well as may be, the impossibility of applying specific terms in complicated and atypical cases.

It must also be remembered that many laymen of intelligence and scientific education are quite capable of understanding a rudimentary description of disease, and that they demand something different from the consideration we would give a child who pestered us with questions. One such man said, "I pay a physician not only to help me get well, but for his opinion of my case, just as I would pay a lawyer. I expect that both the physician and the lawyer will know more than I do about the nature of my troubles, in body or in business, but I also expect that each will deal honestly with me in explaining points about which I am not informed. If I found that either was misrepresenting matters to me, or was putting me off with meaningless jargon to save himself trouble, I should discharge him as having dealt dishonestly with me, no matter how successfully he was carrying on my case." There is another side to such an argument, but it represents accurately the attitude which one of our own profession would naturally assume in dealing with the legal profession. Moreover, it must not be forgotten that the superiority implied in the use of the word *laity* is by no means generally admitted, nor, in fact, is it justified by the lax standards of admission which our profession has hitherto allowed. Right or wrong, we cannot afford to allow any of the intelligent and self-respecting among the laity to feel that he has been deceived, or his judgment belittled in a situation of supremest importance to himself.

The matter of prognosis is intimately connected with that of diagnosis—inseparably so in fatal diseases. We have in mind the experience of a physician who makes it the rule to inform the patient or some member of his family of the true prognosis, though the rule is liable to occasional exception. In one instance, a patient was in a mental condition such that she could not have appreciated or given serious attention to the grave matter of an unfavorable prognosis and, from visit to visit, he happened to miss responsible members of the family. The patient died without warning, and he was blamed accordingly. In a second instance, a patient, accompanied by her husband, sought his counsel, solely with regard to diagnosis for or against cancer, with reference to the advisability of operation. "Hedging" or temporizing was impossible; he could not encourage the patient without urging a totally unjustifiable surgical interference; he could only tell the cruel truth and, in retrospect, he knows how, week after week, the patient suffered mental anguish on account of that truth. In a third instance, the family were informed of the fatal outcome and, as often happens in such cases, another physician was called in his place. The truth in many instances means an immediate financial and professional loss, but this is nothing to the ultimate loss of confidence which the man suffers who maintains a transient hold on a family by misrepre-

sentations which time will surely expose. We recall an instance in which a surgeon attending a patient, explained certain pains in the chest as rheumatic; later, the patient "was threatened with pneumonia;" still later, a large empyema was evacuated; again, the patient was "doing nicely," and then—he died. One hardly knows which is the charitable alternative in such a case. But the result is practically the same whether the lay impression is that the attendant was ignorant of the true condition, or was deliberately misrepresenting it from day to day. Of course, if the patient had recovered, matters would have been different. Still, a physician before following such a policy, must ask himself whether a sufficiently large proportion of cases will recover to prevent even the patients who have had a favorable outcome from entertaining the suspicion that they have been merely the lucky ones in a game of chance.

Finally, the ethical consideration of divulging a prognosis ought not to be ignored. We may rightly spare the patient the suspense which precedes the crisis of nearly all serious diseases, and we may well hesitate to tell a patient incapable of reasoning, of the approach of death. Otherwise, we have no right to shirk the responsibility of informing a patient that his end is near. The physician who can be appealed to as a Christian—Christian is by no means synonymous with sectarian—must realize without argument that transition from one existence to another is a matter of awful import. If one disregards this view of death, there remain purely temporal matters, such as the making of wills and disposition of affairs, to which almost every one should give attention before departing this life.

What, in religion or philosophy, is there to support the assumption that death is the *summum malum*, or that it is the duty of the well to delude the sick into regarding life as a permanency?

CORRESPONDENCE.

DEATH OF PASSED ASSISTANT SURGEON W. D. BRATTON, U. S. MARINE HOSPITAL SERVICE.

I have the painful duty of announcing to the officers of the Service the sudden death of Passed Assistant Surgeon William D. Bratton, which occurred at Sabine Pass, Texas, on the 2d instant, under peculiarly distressing circumstances.

In the pressing need of medical officers for active work during the present yellow fever epidemic in the South, Passed Assistant Surgeon Bratton, though an invalid, and therefore on waiting orders, promptly volunteered his services to meet the emergency, and the tender was accepted in the spirit in which it was made. He was ordered to Sabine Pass to assume charge of Service matters relating to the quarantine service at that port, where he arrived and reported himself on duty the 28th ultimo. On the 1st instant he had been superintending the disinfection of a vessel and returning to the ship to reassure himself upon the work done, he fell through a ventilating hole, striking his head on an iron knee, producing concussion of the brain. He remained undiscovered for several hours, and when found was unconscious and remained so until death occurred, eighteen hours after the unfortunate accident.

William Du Bose Bratton was born in Fairfield County, South Carolina, June 23, 1860, the son of General John Bratton of Winnsboro, in that State. His early education was acquired in Mt. Zion School, Winnsboro, and at Abbeville, South Carolina. In 1874 he was matricu-

lated at the Carolina Military Institute at Charlotte, North Carolina, remaining two years, and then entered the University of the South at Sewanee, Tennessee, where he received the degree of B. S. in 1880, after a three years' course. He at once began the study of medicine, and was graduated at the Medical College of South Carolina, March 1, 1884, and for the year following was House Surgeon at the Charleston City Hospital.

He was commissioned as assistant Surgeon April 1, 1885, and assigned to duty at New York. His subsequent stations while in that grade were San Francisco, Cal., as medical officer of revenue cutter "Corwin" for service in Alaskan waters, and then for temporary duty at Port Townsend, Wash. He was commissioned a Passed Assistant Surgeon April 2, 1888, and again assigned to duty as medical officer on the revenue cutter "Bear" for service in Alaskan waters. In May, 1889, he was ordered to duty in command of the Service at Portland, Oregon, where he remained two years, and was then assigned to duty at Chicago, Ill. In 1893, he was placed in command of the Service at Buffalo, N. Y., where he remained until January 9, 1894.

In the fall of 1893 he first became aware of a condition of health which gradually disclosed a tuberculous character, and after the Bureau had been officially informed of it, he was sent to Wilmington, N. C., for its favorable climate, where he remained several months, doing meanwhile temporary service at Delaware Breakwater Quarantine, but later he was placed on "waiting orders," (January 1, 1895), taking up his residence in Arizona, and finally at Albuquerque, New Mexico, to obtain the advantages of the southwestern arid region. After a two years' residence there he reported, in March, 1897, his gradual return to a state of health, which justified him in asking for an early restoration to active duty, but further delay was advised in order that he might have the benefit of a longer residence, and, if possible, a permanent cure.

Passed Assistant Surgeon Bratton, during the period of "waiting orders" became much interested in the climatic treatment of consumptives, and wrote several reports on the arid region of the southwest as the best locality for such work, recommending the establishment of a sanitarium in that section for the treatment of patients of this Service suffering from the disease.

His literary and scientific attainments were of a high order, and his studious habits and keen faculties enabled him to maintain in the Service a reputation for unusual professional knowledge and skill in practice. Officially, devotion to duty was always a paramount consideration with him, and his conscientiousness in respect thereto was a marked characteristic of his work.

Personally, he was of modest and reserved manner, yet frank and manly in his demeanor, and actuated by a high sense of honor in all relations with his associates. He was in every respect a noble officer.

Respectfully yours,

WALTER WYMAN,
Supervising Surgeon-General, M. H. S.

Washington, D. C., Oct. 12, 1897.

The *American Druggist* suggests the following remedy for the annoying mosquito: Take some powdered pyrethrum (Dalmatian flowers), moisten and mix into a paste, mould the stuff into conical lumps as big as chocolate drops, and bake in an oven. "When fired at the point," says the journal just referred to, "such a cone will smoulder slowly and send up a thin column of pungent smoke, not hurtful to man, but stupefying to mosquitoes. In actual experience two or three such cones burned during the course of an evening have given much relief from mosquitoes in sitting rooms."

The recent order of the Board of Agriculture of Great Britain directed against the importation of American dogs into England, together with the numerous sensational newspaper articles on rabies which have appeared, has led the American Kennel Club to appoint a committee to investigate and report upon the existence of rabies in America. The various lines of investigation of the prevalence of this disease which have been instituted will eventually afford reliable data of positive information.—*Med. News.*

ABSTRACTS.

THE BOTULISMUS TOXIN (MEAT POISON, SAUSAGE POISON) AND THE BOTULISMUS BACILLUS—BOTULISMUS ANTITOXIN.*

It is a comparatively frequent occurrence that epidemics of more or less fatal poisonings from certain eatables are reported, especially in warm weather. Such cases frequently occur, for instance, at picnics, where meats used for sandwiches, etc., are apt to be exposed, for a longer time than usual, to the high temperatures of the hot season. The formation of poisonous substances has been observed to occur in various forms of albuminous food, such as sausage, ham, canned meat, and also in meat which has not been subjected to any preserving process. It has been observed also in fish, oysters, cheese, ice cream, etc. Until very recently these poisonous ingredients have been classified with the group of ptomains, their exact origin not having been satisfactorily explored.

Attempts to obtain from the culture of micro-organisms found in such poisonous meats, etc., toxic principles that are identical in physiologic action with this poison had failed completely. The micro-organisms, principally of the bacillus coli variety, did never yield by the usual method the exceedingly poisonous ingredient, known as meat poison, sausage poison, etc.

In 1896 van Ermengem succeeded in demonstrating a specific anaerobic bacillus in a ham which caused an epidemic of poisoning at Ellezelles, Belgium. Since this discovery the investigation of meat poison has entered into a new phase of development. Van Ermengem cultivated from the remains of a ham and from the spleen of one of the victims of the epidemic a bacillus, whose culture fluid contained a specific toxin with which the typical symptom-complex of meat poisoning, technically known as botulismus, could be produced in the animal experiment. The clinical phenomena of botulismus are characterized by decrease and increase of salivary and mucous secretion of the mouth, fauces, etc., blepharoptosis, mydriasis, diplopia, strabismus, dysphagia, which may result in aphagia, aphonia, obstipation, retention of urine—absence of fever and brain symptoms. This symptom-complex is frequently associated with disturbances of respiration and the action of the heart, causing death under the phenomena of bulbar paralysis.

Brieger and Kempner[1] have verified van Ermengem's statement that the botulismus poison producing the above train of symptoms belongs to the same specific group of toxins of which the toxins of diphtheria and tetanus are representatives. In the animal experiment Kempner has succeeded in obtaining an exceedingly effective antitoxic serum from animals immunized against the botulismus toxin. In conjunction with B. Pollack he has verified, with some modifications, the changes described by Marinesco[2] that take place in the cells of the spinal cord after an animal has been injected with botulismus toxin. These authors could not, however, corroborate the observations of Marinesco with regard to the increase of intercellular neuroglia.

Kempner and Pollack[3] have also studied the regenerative changes that take place in the nerve cells as a result of treatment with botulismus antitoxic serum of animals that were before, simultaneously and afterwards injected with botulismus toxin. On the fourth day after the injection of the antitoxin, when the clinic symptoms due to a previous injection of toxin had disappeared, there was still considerable evidence of degeneration in the nerve cells, the cells still presenting the appearance of "partial pulverization" (disintegration of Nissl's corpuscles); the cell boundaries were not de-

* Editorial in *Medical Review.*

[1] "Beitrag zur Lehre von der Fleischvergiftung," *Deutsche Medicinische Wochenschrift*, August 12, 1897.

[2] Comptes rendus, November, 1896—*Press Medicale*, 1897 No. 8.

[3] *Deutsche Medicinische Wochenschrift*, August 5, 1897.

stroyed. Gradually more and more cell elements became discernible and normally stainable, until after two weeks the cells again presented an almost normal appearance, excepting that the regenerated elements appeared more deeply stained than what is ordinarily the case.

It is Nissl's merit to have shown a method of staining nerve cells with alcohol-methylenblue by which it has become possible against all former expectations to observe in nerve cells degenerative change due to the action of noxious substances, especially toxic agents.

It is an interesting phenomenon that if diphtheria or tetanus toxins are mixed in the test-tube with their respective antitoxins, a smaller quantity of the latter is required to counteract the effects of the former than if the respective toxins and antitoxins are separately injected, but at the same time, in different parts of the body. The same phenomenon Kempner and Pollack observed in their investigations with botulismus toxin and antitoxin. The microscopic anatomic degenerative changes in the nerve cells also corresponded in this respect with the clinical observations. For in those cases in which a mixture of botulismus toxin and antitoxin had been injected there was no change whatever observable in the nerve cells, while in some of the cases in which the toxin and antitoxin had been injected separately, but simultaneously, a partial finely granular disintegration of the peripheral corpuscular elements, known as Nissl's corpuscles, was observed so late as twenty days after the injection. By these experiments it was also shown that the injection of a certain quantity of botulismus antitoxin twenty-four hours after the injection of a deadly dose of toxin, saved the life of the animal and that even where there was present a considerable degeneration of the nerve cells the latter were completely regenerated, which fact was determined by their re-acquired staining capacity.

Brieger and Kempner make the statement that the botulismus toxin owes its origin exclusively to the activity of the botulismus bacillus discovered by van Ermengem. Experiments with putrefying pork as well as with many different putrefactive liquids under the most varying circumstances never resulted in the discovery of a toxin similar to that of the botulismus toxin. If, however, nutrient media of different origin, for instance fish, meat, milk, etc., were inoculated with the botulismus bacillus, the production of botulismus toxin of stronger or weaker physiologic action was the invariable result. The reason that the botulismus bacillus has not been discovered in the many researches of other investigators Brieger explains by the very plausible fact that bacteria of the bacillus coli variety occur in such great abundance in meat poison that the attention of bacteriologists was concentrated upon these bacteria. Brieger also calls attention to the readiness with which other infections may be mistaken for a botulismus infection, and quotes a fatal case which had been diagnosed as a botulismus infection where he was able to demonstrate in nearly all parts of the tissues, sent to him for examination, the presence of virulent streptococci in the form of almost a pure culture.

While it does not necessarily follow from these researches that the botulismus bacillus discovered by Ermengem in the Belgium epidemic is the only cause of the deadly poison that seems to form under certain conditions in various articles of food, the fact that investigators have never before succeeded in producing toxins from any of the bacteria found in such poisonous food, together with the possibility of cultivating the botulismus bacillus upon various albuminous culture media, suggests the idea that the cheese poison, the sausage poison, the fish poison, etc., may be caused by a micro-organism which is either identical with or biologically similar to the botulismus bacillus of Ermengem; while the fact that Brieger and Kempner extracted a strong poison from putrefying blood which in a solution of 1:10,000 killed guinea-pigs under the preceding phenomena of paralysis, would speak for the probability that different kinds of toxins are the cause of some of the epidemics that are not infrequently reported as a consequence of partaking of one or the other of the above mentioned albuminous articles of food. It seems that with the new impetus which the investigation of botulismus has received by the discovery of Ermengem's bacillus the final solution of these questions may be expected in a comparatively near future.

SYMPTOMATOLOGY OF LITHEMIA.*

The newly-born lithemic infant is prone to eliminate an excess of urates in the first days of life. These urates may manifest themselves by the deposit of red sand on the diaper. The urine of these infants contains an excess of urates and also of oxalates; it has a high specific gravity and is very acid in reaction. In such infants the uric acid crystals may be precipitated into the tubules of the pyramids of the kidney and there cause much irritation. Fever, which may continue for days and be as high as 104° F., and paroxysms of crying with intervening fretfulness, are the most characteristic symptoms; these paroxysms occur at the time of the passage of urine. The urine in these cases may be so irritating as to cause a vulvo-vaginitis in the female infant and a urethral irritation in the male. When such conditions exist the urine is retained by older children as long as possible and then passed with great pain. When paroxysms of crying recur in an infant with lithemic inheritances coincident with the passage of urine so heavy with urates as to deposit a red sand on the diaper, one is justified in making a diagnosis of this special uric acid type of lithemia.

Such cases are not uncommon, and I am convinced that much of the elevation of temperature, which occurs in infants during the first days of life, is caused by uric acid deposits in the urinary passages. L. Emmett Holt says: "the symptoms presented by these infants were a hot, dry skin, marked restlessness, dry mouth, and a disposition to suck vigorously anything within reach—everything indicated great thirst. With a high temperature there was considerable prostration and weak pulse. In the milder cases there was only unusual restlessness and crying. The rapidity with which the symptoms disappeared when nursed or fed was striking." Lithemic children may, as they grow older, continue to suffer from attacks of painful urination accompanied by an elevation of temperature and irritation of the external genitalia. In adults it is common to find frequent and painful urination associated with the passage of urine small in quantity (seven to ten ounces in twenty-four hours), high in specific gravity (1030-40) and heavy with urates.

Nocturnal incontinence of urine in children may be a lithemic symptom resulting from the irritable condition of the urinary passages and the instability of the spinal nerve centres which may occur in these children. If one recognizes the fact that lithemia is sometimes the most potent factor in producing the incontinence of urine one will succeed in curing cases of incontinence that have resisted over a period of years all other kinds of treatment. I wish to note, however, that my experience teaches me that incontinence of urine does not occur in the great majority of lithemic children, and also that lithemia does not rank among the most important causes of this neurosis. Yet, it is none the less important that one should recognize the fact that lithemia is occasionally such an important factor in the production of enuresis that its cure cannot be affected except by treating the lithemia.

It is not within the scope of this paper to consider the symptoms which result from uratic deposits in the joints and other tissues (gout), or those which are caused by uratic acid calculi in the urinary passages (gravel). The symptomatology of these conditions is fully described in every text-book and does not properly belong to lithemia.

With this outline of the role which uric acid plays in the lithemia of infancy and childhood, we may pass to the consideration of the toxic symptoms of lithemia, which, as I believe, are due to the alloxan bodies other than uric acid. The chief offenders among these bodies are paraxanthin and hetroxanthin.

Gastro-enteric symptoms.—The gastro-enteric symptoms of lithemia in infancy and childhood are little understood, yet they are of vast importance. Lithemia may manifest itself in very young infants by attacks of gastric pain associated with rapid breathing, nausea, vomiting and fever. The gastric paroxysms may be so severe that all food is rejected for a period of from one to five days. The tempera-

* B. K. RACHFORD, M.D., in *Pediatrics.*

ture may reach 104° or 105° F., but sometimes in the most severe cases the fever ranges between normal and 102° F. In these attacks the infant may be prostrated to the last degree, and there may also be much emaciation. Occasionally these lithemic paroxysms are ushered in by convulsions, which may in time come to be characteristic symptoms of these attacks. These gastric paroxysms are self-limited. In duration and severity they are influenced but slightly by medical treatment. The nausea and vomiting go almost as quickly as they came, but there is left more or less soreness and gastro-enteric irritation, from which the infant or child slowly convalesces. The stools following these attacks are very putrid, and in young infants are sometimes oily in character on a strictly milk diet. There may be an interval of from one to six months between these attacks, and in the milder cases the infant or child may be almost or quite well during this interval. But unfortunately this is not always so, since some of these patients do not get entirely well between the attacks. A few of these children remain pale and frail looking at all times. They are peevish and hard to please; they are as relentless as they are exacting in their demands. Lithemic infants and children are mentally precocious, and when ill and peevish between these attacks they exercise this precocity in devising ways and means to secure the constant attention of all around them. From the gastro-enteric type of lithemia above described, there are many variations. In children these attacks may occur, as they sometimes do in adults, with little or no elevation of temperature. They may or may not be accompanied by convulsions, headache, gastric pain or dyspnea. The dyspnea, when it does occur, is an interesting symptom, since it is not due to pulmonary causes but is, like all the other symptoms, toxic in origin and is to be classed as a nervous symptom. In rare instances vomiting of blood may occur, both in the child and in the adult, but this symptom does not change the prognosis or delay the return of the digestive organs to their normal condition after the attack. In infancy, childhood and adult life, a chronic intestinal fermentation may be dependent upon a lithemic condition; but in these cases the symptoms, which are always present as a result of the chronic intestinal fermentation, are at times aggravated at irregular intervals into more acute attacks of gastro-intestinal disturbance. These acute gastro-intestinal attacks recur without apparent cause and at more or less regular intervals, in that way breaking in upon the milder gastro-enteric symptoms, which are always present as the result of the chronic fermentation. The gastro-enteric type of lithemia is quite as common in the adult as in the child I have seen cases in adults which presented almost the same group of symptoms above detailed in the case of the five months' old infant.

In adults the pain of these gastric attacks may be so severe and the vomiting so persistent that the hypodermatic use of morphia is necessary to relieve the paroxysm. As a result many of these patients acquire the morphin habit. These cases are common in the practice of every physician and are commonly diagnosed as "gastralgia" or "enteralgia." The milder cases are spoken of as "nervous" or "hysterical dyspepsia." As these terms indicate, the gastric symptoms of lithemia in the adult, as well as in the child, may vary from a slight dyspepsia to an attack of pain and vomiting so severe as not only to strike down but even to endanger the life of the patient. One of the marked peculiarities of lithemia is the substitution of one form of lithemic paroxysm for another. Epigastric pain unaccompanied by nausea and vomiting may be a symptom of lithemia. In truth, the gastro-enteric symptoms of lithemia are so diverse that each case may be said to have its own peculiarities. This is the reason that such an elastic term as "nervous dyspepsia" has been used in describing some of these cases.

Nervousness in a great variety of manifestations is to be observed in lithemic individuals. It might also be said that the entire symptomatology of lithemia in childhood may be directly or indirectly referred to the nervous system. Infants and children with strong inborn lithemic tendencies have very unstable, nervous symptoms. The increased reflex excitability of the nervous systems of these children predispose them to general nervous irritability. In fact, nervous irritability is a common symptom of lithemia at all

ages. In adults this symptom is not uncommonly associated with mental depression and other neurasthenic symptoms. Mental depression of the most extreme type is very commonly associated with other lithemic symptoms, and especially with the gastro-enteric type of lithemia. It is common for these patients to ascribe all of their symptoms to business cares or troubles, while in fact their symptoms are lithemic in origin, and their worry over their business affairs is but one of the most common of lithemic symptoms. It is a fact also that overwork may contribute to the development of neurasthenic symptoms in lithemic individuals, and it is therefore important that one should understand that mental overwork is much more likely to produce neurasthenic symptoms in lithemic individuals than it is in those who have not inherited this diathesis. It is a good working rule to always search for the lithemic factor in every case of hypochondriasis and neurasthenia. If you find this factor, you will be much more successful in the treatment of these conditions.

Lithemic children are commonly mentally precocious, yet precocity as a symptom of lithemia is little understood. Special note is made of this symptom here that I may call attention to the difference between tuberculous and lithemic precocity. These conditions are confused in recent writings. Precocity in tuberculous children is fitful and sadly lacking in symmetry. It is always coupled with physical inferiority. These children are frail, anemic and incapable of sustained physical and mental activity. They are quick at repartee and often have good memories which are developed at the expense of other mental faculties. If encouraged in mental precocity, these children may early in life exhaust their mental energy in the development of a single faculty and then lapse into mediocrity. But these children may fare even worse than this, since they may be irreparably ruined by proud mothers and over-zealous nurses who commence the process of mental cramming even before infancy has passed into childhood. The poorly nourished tuberculous child is brought forward for the purpose of demonstrating its wonderful precocity, and this over-stimulation of a poorly nourished nervous system may dwarf the child both physically and mentally.

Such is the picture presented by tuberculous precocity. This picture is, as a rule, very unlike lithemic precocity, which is commonly associated with good physical development. At least one may say that lithemic precocity embraces all those abnormally precocious children of good physique who have inherited from an intellectual, lithemic parentage, unusually active nerve centres. Such children, if properly restrained during childhood, are capable of the highest intellectual development in after life. Lithemic precocity, even when coupled with physical inferiority, is not so fitful, so symmetrical and short lived as tuberculous precocity. But mental precocity in the human infant and child, whether it be tuberculous or lithemic in origin, always needs intelligent restraint. Under intelligent restraint the lithemic child is capable of the highest intellectual development in after life. He is not a degenerate but should be guarded as one threatened with degeneracy. It may be noted that tuberculosis and lithemia very uncommonly occur in the same patient. It is, in fact, a well grounded belief that lithemia is antagonistic to tuberculosis. For this reason there should be no difficulty in making a diagnosis between lithemic and tuberculous precocity.

Eclampsia is a classical symptom of lithemia, and one to which little attention has been directed. Eclampsia is not uncommonly associated with other well-marked lithemic symptoms. My laboratory experiments have demonstrated that eclampsia is one of the most striking symptoms of lithemia. In these experiments I demonstrated that the periodic convulsive seizures, epileptoid in character, which not uncommonly occur as symptoms of lithemia, are produced by the action of the poisonous xanthin bodies on the nerve centres.

But the fact of greatest importance concerning lithemic eclampsia is that these convulsions may continue to recur at intervals until finally we may have established the well-known type of epilepsy which has commonly been described as migrainous epilepsy. The term migrainous is used in describing this special type of epilepsy because it commonly occurs in patients who have suffered from migrain.

In fact, migrain and epilepsy very commonly alternate in this class of cases.

Lithemic epilepsy is a distinct type of epilepsy not to be confounded with idiopathic, reflex or focal epilepsy. It occurs always in association with other lithemic symptoms, such as migrain or the gastric neuroses above described. With these symptoms the epileptoid paroxysms may coincide or they may alternate in distinct paroxysms. This form of epilepsy makes but a small proportion of the sum of all epilepsies and is not related to the common forms of epilepsy, such as idiopathic, reflex and focal epilepsy, but its comparative infrequency makes it none the less important as a lithemic manifestation. Lithemic epilepsy is for the most part a disease of adult life. It commonly develops late in childhood or adult life as a sequel to migrainous attacks, with which it may afterward alternate. It embraces the cases which have been described as migrainous epilepsy, and some of the cases which have been described as hystero-epilepsy.

In the female, lithemic epilepsy may recur at every menstrual period and, in rare instances, it may begin at puberty and cease at the menopause. The clinical picture presented by these seizures is very like the grand mal type. The initial cry, the general tonic and clonic muscular spasms, the spasm of the respiratory muscles, the spasm of jaw muscles, the frothing at the mouth and contraction of pupils and the subsequent prolonged narcotism may all be present to make a picture of lithemic epilepsy. Lithemic epilepsy does not belong to the degenerate types of epilepsy. It is not inconsistent with the highest intellectuality and mental vigor. In later life it is, however, commonly associated with arterio-sclerosis and the symptoms which accompany this condition. Lithemic epilepsy, while not the most frequent, is yet the most striking and one of the most characteristic symptoms of lithemia in adult life. Its importance in the study of the lithemic manifestations of childhood arises from the fact that lithemic eclampsia, which is not an uncommon manifestation of lithemia in infancy and childhood, may be the precursor of lithemic epilepsy in after life.

Migrain is one of the most common as well as one of the most characteristic symptoms of lithemia in adult life, and it is but little less important as a manifestation of this condition in childhood. These paroxysmal and commonly unilateral headaches recur at more or less regular intervals without apparent cause. They are usually associated with disorders of vision and frequently with nausea, vomiting and gastric pain. They are self-limited and, as a rule, end in narcotism, which produces a profound sleep from which the patient awakens convalescent from the attack. Such attacks are not uncommon in early childhood, and in late childhood these "sick headaches," as they are called, are very common.

I use for these the term "leucomain poisoning" because I found that these migrainous headaches were caused by the direct action of the poisonous uric acid leucomains, paraxanthin and heteroxanthin, on the nerve centres. I have examined a large number of patients with true migrain, and I have always found that these attacks were coincident with the excretion in the urine of an enormous excess of these poisonous xanthin bodies. In their common factor, leucomain poisoning, we have an explanation of the relationship which exists between migrain and lithemic epilepsy. Other factors may contribute to the production of these paroxysmal attacks. But leucomain poisoning is the one essential factor in the production of both lithemic headaches (migrain) and lithemic epilepsy. These symptom groups are therefore diagnostic of lithemia.

Lithemic headaches (migrain) may be divided into two distinct clinical types. In the type which may be designated as *sick headache*, there is severe paroxysmal headaches associated with more or less nausea and vomiting. The nausea, vomiting and hypersecretion of gastric mucus are in fact the symptoms which characterize these migrainous attacks as "sick" headaches. The other distinct type of lithemic headache may be called *migrainous neuralgia*. In this form of the disease we have severe paroxysmal headache, but it is not associated with gastric symptoms of any kind. This division of lithemic headaches is important from a therapeutic standpoint, since the two types of headache do not yield alike to the same line of treatment.

It may be broadly stated that headache,

gastric pain, nausea, vomiting, eclampsia and rapid breathing (asthma) are lithemic symptoms which may recur in paroxysms and which may be commingled in varying degrees of intensity to make the clinical picture of an individual attack.

Periodic attacks of severe neuralgia are of common occurrence in lithemic patients. These severe neuralgias may take the place of migrain or other lithemic attacks from which the patient formerly suffered. Lithemic neuralgia is characterized by its periodic recurrence without assignable cause, and by its self-limitation; the attacks last but a few days and disappear almost as suddenly as they come. When these neuralgic attacks are continued for a longer time they are probably prolonged by a neuritis which has resulted from the lithemic poisons. Any nerve in the body may be the seat of lithemic neuralgia, but the sciatic, the trifacial and the intercostal nerves are the most common sites for this affection. Lithemic neuralgia is much less common in childhood than in adult life.

Vertigo as a lithemic symptom belongs for the most part to middle and advanced life. It is of little importance in childhood, except as it is associated with lithemic headaches. The same may be said of aphasia. This interesting symptom occurs not infrequently in association with lithemic headaches and lithemic epilepsy. It is transitory and not accompanied by paralysis.

Angio-neurotic edema may sometimes have lithemia as one of its factors. It does not occur in childhood. At this period of life the only symptom related to this condition is urticaria, which is not an uncommon manifestation of lithemia in infancy. Lithemia may be a factor in the etiology of certain cases of melancholia, and my experience leads me to believe that these cases are much improved if not cured by anti-lithemic treatment.

Respiratory symptoms.—Dyspnea may be a lithemic manifestation. It is one of the most characteristic symptoms of experimental paraxanthin poisoning. This dyspnea may be accompanied by a spasmodic contraction of the diaphragm. One finds in these experiments an explanation of the rapid breathing which is a common symptom of the lithemic paroxysms in infants and children.

I made special note of the fact that the very rapid breathing of this infant, suffering from a severe attack of gastro-intestinal lithemia, was not explained by the fever nor by the bronchial disease. Dyspnea may, as I believe, be a symptom of lithemia which manifests itself through the respiratory organs, and which is really a nervous symptom. Spasmodic asthma may result from the action on the nerve centres of lithemic poisons.

Lithemic asthma occurs only in adults, and may alternate with other lithemic attacks, or may take the place of other lithemic paroxysms of former years. Lithemic asthma is not among the most common manifestations of this condition, but it is of sufficient importance to warrant a careful inquiry as to a possible lithemic factor in every case of spasmodic asthma.

Pelvic symptoms of lithemia are spoken of by many writers. Lyman, of Chicago, and Johnstone, of Cincinnati, have expressed the opinion that lithemia is a potent factor in producing pain in the female reproductive organs, and make special note of this factor as producing certain types of dysmenorrhea.

Eczema is one of the most common lithemic manifestations in infants and children. Lithemic eczema is, in fact, a common disease at all periods in life. I wish especially to ask attention to the importance of this symptom, since the successful treatment in this form of eczema depends upon the recognition and treatment of the lithemic element. Lithemic eczema may occur in well-nourished children with the family history of lithemia, and is to be carefully differentiated from scrofulous or tuberculous eczema, since these two types of eczema require radically different treatment. The iron and arsenic used in scrofulous eczema are contra-indicated in lithemic paroxysms.

Among the ocular manifestations of lithemia are contraction of pupil and nystagmus. My attention was called to these symptoms by studying the symptoms of experimental paraxanthin poisoning in the guinea pig. Hemianopsia, dark spots before the eyes, or flashes of light may also accompany or precede lithemic paroxysms.

The urine excreted during a lithemic paroxysm is as a rule scant and unusually acid in reaction. It is highly colored, and the specific gravity is, as a rule, consider-

ably increased, and on standing there is a heavy deposit of urates. In the urines passed immediately following lithemic headaches, lithemic epilepsies and certain other of the more severe forms of lithemia, the poisonous xanthin bodies, paraxanthin and heteroxanthin may be found in enormous excess of the normal minute quantities of these substances which are found in the urines of non-lithemic individuals.

PERISCOPE.

Transmission of Scarlet Fever by Mail.—A case is related by Dr. Grasset in which a child two years old was taken ill with scarlet fever in an isolated house one and one-half miles from the city and one-quarter of a mile from any other dwelling. Scarlet fever had been unknown in the district for many years. A sister of the child, aged nine years, had been visiting her grandparents for about six months, at a distance of twenty-five miles from home. This child was taken ill with scarlet fever. The parents did not visit her, but received by mail a letter, in which, in order to show the extent of desquamation, the relatives enclosed three scraps of epidermis, of several centimetres in diameter. The parents allowed the infant to take this letter in her hands. It was received on the twenty-first of November. On December 1 the child was taken ill with fever, followed by vomiting, sore throat, and a general eruption. A similar case is published by Sanné in the article on scarlet fever in Dechambre's "Dictionnaire Encyclopédique," p. 327. A sick person wrote from Germany that he was "peeling" so abundantly that he was obliged to shake the letter frequently, which he was writing. A few days afterwards this letter was received in Brittany, the mother and daughter were taken ill with scarlet fever; the mother died, while the daughter recovered after a serious illness.—*British Med. Jour.*

The bushmen of South Africa use the juice of the leaf beetle "Diamphidia" and its larva for **poisoning arrow-heads.** Lewin found in its body, besides inert fatty acids, a toxalbumin which causes paralysis and finally death. According to Boehm, the poison from the larva also belongs to the toxalbumins, and Starke states that it causes the dissolution of the coloring matter of the blood and produces inflammation. To obtain a solution of the poison, Boehm recommends maceration of the whole larva with distilled water. After some hours they swell and the solution becomes light yellow, and is acid in reaction. This reaction remains after shaking out with ether. The aqueous solution has poisonous properties, which are destroyed by boiling. It gives the usual reactions of a toxalbumin, and may be precipitated from its aqueous solution by means of sulphate of ammonia.—*Pharm. Central.*

Gelatine Substitute for Glass, called tectorium, has been found satisfactory in Germany, for these reasons: (1) It can be bent without being broken; (2) is both tough and flexible; (3) is not softened by the rays of the sun; (4) is non-soluble; (5) is not affected by severe cold; (6) is a bad conductor of heat; (7) is well adapted for roofs, on account of its extreme lightness; (8) when exposed to the sun it loses its original yellowish color in time and becomes harder and more durable; (9) can be made, by a very cheap process, to imitate stained glass in such manner that it cannot be distinguished from the genuine article; (10) can be cut by shears, nailed to wood, and transported without danger; (11) can be easily repaired in case it is cut; (12) does not break; and (13) is well adapted for factory windows and skylights for hothouses, market halls, verandas, transportable buildings, and for roofing. The consuls state that it is sold in small quantities in a few places, but that it is not known to the general public and as a commercial product is still an experiment.—*Sci. Amer.*

In actions for personal injuries, in order **to recover for medical attendance** and similar items, the Supreme Court of Nebraska says (Golder vs. Lund, March 3, 1897) that it is necessary for the plaintiff to show two facts: First, what expense he actually incurred; and, secondly, that it was reasonably incurred. It is not the reasonable charge for medical services which he may recover, but the expense to him of such services, not to exceed their reasonable value. But in order to recover in such an action for expenses of medical treatment, the court further holds it is not necessary to prove by the record that the physician rendering the services was licensed to practice under the statute. Proof that he practiced as a physician raises the presumption in actions between third parties that he was licensed to do so.—*Jour. A. M. A.*

Hamant recommends the use of a belladonna salve for abscesses caused by the external eruption of an underlying tuberculous focus (extract bellad. 3 to 30 grams vaselin), as he has found it possessed a favorable, even perhaps a specific effect in such cases, the more remarkable as it has no effect on non-tuberculous ulcerations.—*Jour. A. M. A.*

The Bacteriology of the Schuylkill River.—Visitors to Philadelphia during the International Congress of 1887 may still remember the epidemic of diarrhea which interfered in such a marked degree with their comfort, not only in Philadelphia, but also at Washington. The diarrhea was in some instances so severe as to induce considerable prostration, though it would perhaps hardly be fair to explain the scientific poverty of the Congress on that sole ground. It is interesting to note that the bacteriologic examination of the water of the Schuylkill River at Philadelphia has revealed the presence of colonies of spirilla, presenting all the appearances and reactions of the cholera vibrio. It might be well to follow up the inquiry by an investigation of the waters of other rivers in eastern America, the Potomac, for example, which flows through Washington, for we strongly suspect that it also might be found to contain micro-organisms exerting similarly deleterious effects on human beings. We remember only too well that the ordinary remedies utterly failed to alleviate the distressing symptoms of these lethal waters, and admixture with ardent spirits, even with twelve-year-old Kentucky whiskey, afforded no protection against its effects, as we can personally testify. There is a moral to this story, viz., that it is unwise for travellers to indulge unduly, or indeed at all, in water as a beverage, under circumstances which preclude personal supervision of the source and purity of the fluid. In the natural and artificial table waters we have some sort of guarantee of purity from pathogenic micro-organisms, and he will be well advised who, when travelling, limits the means of quenching his thirst thereto.—*Med. Press.*

D'Arcy Power (*International Journal of Surgery*) says **intussusception brooks no delay in its treatment,** for something must always be done at once, except, perhaps, in those slight cases which are indistinguishable from severe colic. In all doubtful cases purgatives should never be used. The routine treatment is to chloroform, high enemata of best saline solution, the fluid being allowed to remain in the intestines for at least ten minutes. The earlier this method is adopted after the appearance of symptoms the better are the results obtained; but it should not be adopted in enteric intussusception, in cases where the symptoms are very acute, or in those where the absence of signs or symptoms, with a subnormal temperature, leads the surgeon to suspect gangrene of bowel. In these cases, and when the intussusception is not reduced after irrigation has twice been tried, or when after reduction the intussusception has thrice recurred, the abdomen must be opened. The surgeon must then be prepared to deal effectually with the conditions he may find, by such operative means as he can carry out with the least amount of shock, and in the shortest space of time that is compatible with the safety of the patient. He should bear in mind that hardly a case can arise in which he is justified in closing the abdominal wound without an attempt to complete the operation by reducing or removing the intussusception. Such half measures as the formation of an artificial anus are hardly ever justifiable, and the results thus obtained are, usually, most disastrous. In the light of our present knowledge, it appears that the use of a button or bobbin is most likely to give good results when enterectomy is necessary, while Maunsell's operation is best adapted for the cure of ileocecal and colon-colic forms of intussusception.

Abbe (*Annals of Surgery*, June, 1897) has recently reported to the New York Surgical Society **a case of hydro-nephrosis in which the kidney was removed by an unusual method.** An incision was made from a point one inch inside the antero-superior iliac spine, upward and backward for four and one-half inches in a line parallel with the fibres of the external oblique muscle. After separation of the fibres of the abdominal muscles, as is done in the McBurney method, the peritoneum is freely exposed, and can be readily stripped from the front of the kidney. By using good retractors the surgeon can now inspect the pedicle and separate the ureter, which can be followed to the brim of the pelvis. This method, it is held, allows nephrectomy in the most advantageous position for both patient and operator. It gives free access to the kidney and ureter, and is almost a bloodless method, as no muscles are cut across. As each abdominal muscle is divided in the direction taken by its fibres the deep portions of the wound readily fall together, and there is much less tendency to the development of hernia.

The diagnosis of eruptive fevers at the onset is often so delicate, especially in light forms, that it is useful to report the slightest symptoms. Valli-Attiles especially notes the occurrence in scarlet fever of vomiting entirely different from that observed in other eruptive fevers. The vomiting occurs very early, before any other morbid manifestation, and in the absence of any previous gastric trouble, it surprises the child in the midst of play and before the appearance of headache, malaise, fever or initial angina. In a number of cases of scarlet fever without exanthema, the diagnosis was decided solely by the vomiting and the angina following it. The proof that this symptom belongs to the scarlet fever and not to an ordinary angina is that several cases of angina where it existed were complicated with nephritis, and that children subject to recurrent angina never vomited until the day they had scarlet fever and its characteristic angina.—*Jour. of Univ. Med. Sciences.*

A Decision of Importance to Physicians was rendered by Judge Dunbar, at Boston, recently. The circumstances of the case, as reported, were that previous to May 1, 1896, Dr. Oscar F. George had a lucrative practice in Lynn. On that date he sold it to Dr. Edward B. Herrick, who came from Amherst, Mass., signing an agreement not to practice in the city as long as Dr. Herrick remained there. He went to Newburyport, and later to Vermont, and about March 1, 1897, came to Swampscott, where he located and resumed practice, and, as he admitted upon the witness-stand, again began practice among his old patients in Lynn. Dr. Herrick brought a bill in equity in the Superior Court against Dr. George, to have him restrained from practicing in Lynn. As a result Judge Dunbar enjoined the defendant from practicing in Lynn in violation of his promise. The decision is important from the fact that, while the defendant admitted that morally he was bound to keep his agreement, legally he was not bound. The judge, however, decided that he was both legally and morally bound to keep his agreement, and enjoined the defendant from further trespassing upon the ground to which he had signed away all claim.—*Boston Med. and Sur. Jour.*

G. Bogdan (*British Med. Jour.*) relates a **new symptom of cancer.** The patient, a woman, aged forty-eight, suffered from cancer of the stomach. The disease had gone through a long period of latency. The patient presented on each cheek a patch of wine-red discoloration formed by the dilatation of the superficial venules; the stain showed out sharply against the pale yellow of the surrounding skin. On the strength of this symptom alone Bogdan was able to make a diagnosis of probable cancer at a time when there was yet no other manifest sign of that affection. He looks upon such superficial varicosities on the cheeks as a valuable help to the early recognition of certain cancers; he has seen it in about two-thirds of the cases of cancer which have come under his observation; it is particularly frequent in cases of epithelioma of the stomach and uterus, but less common in malignant disease of other organs.

Tuttle (*Jour. Am. Med. Asso.*) states that: (1) **cancer of the rectum** can be cured in over ten per cent. of the cases. (2) The mortality from the radical operation, though still considerable, is not alarming, and is decreasing with every year's experience. (3) The radical operation prolongs life on the average over 100 per cent. (4) As a palliative measure, excision is far more successful and beneficent than any other measure. (5) The sequences, though numerous, are not at all intolerable and should weigh little in our consideration when it is a question of so serious a disorder as cancer of the rectum.

The effects of lightning as it passes to earth through the body of a man vary within an astonishingly wide range. It sometimes happens that a person is killed outright without any symptoms or sign of injury. It may be that death is preceded by collapse, paralysis, or convulsion, usually there are marks where the current has entered or left the body, or clothes may have been scorched, or hemorrhages may have occurred, and more than one case has been recorded where boots have been torn off the feet and nails driven out of the soles of the boots. Seldom does it happen that lightning leaves such appalling evidence of its transit as shown in a recent case. There had been a single flash of lightning and a clap of thunder, and about half an hour afterwards the man was found lying on his face in a field quite dead. Around him, in a radius of several yards, were his clothes and boots, which had been torn and scattered about in an extraordinary manner. The lightning appears to have struck him on the right side of the head, tearing his cap to pieces and burning his hair off. It then passed inside his collar down the front of his body and both legs into his boots, which were torn to pieces, and then passed into the ground, making a hole about eighteen inches in circumference and three inches deep. His collar was torn to pieces, the front of his shirt was rent into ribbons, the jacket and under-vest were literally torn to shreds, and the knickerbockers he was wearing were stripped from him and scattered on the ground. His stockings and gaiters were similarly torn in pieces, and on the boots the lightning had a remarkable effect. They were burst open, some of the eyelet-holes were torn out, nails were forced out, and the soles torn off. The skin had been torn off the chest, and the right leg was torn and blackened; blood was issuing from the mouth and right ear. In connection with this fatality two circumstances of a more or less unusual kind may be noticed. There is, first, the single lightning flash, neither preceded nor followed by others in the neighborhood; and secondly, the fact that the person who was struck was "in the open." The latter comparatively seldom happens, perhaps because shelter is instinctively and perhaps unwisely sought. Here there was no warning and no time for this, and so, without any neighboring object at hand to subdivide and share the discharge, the latter had only one route to earth—viz., the body of its victim. The wet or dry condition of the clothes is an important point in such cases. It often happens that in persons exposed to a thunderstorm the clothes are wet, and therefore afford a comparatively easy passage to any electric current. In the case above detailed the clothes were presumably dry, and therefore bad electrical conductors, and the destructive effect of the lightning would be in proportion to the resistance encountered in transit.—*Lancet.*

In the *Medical News* of July 3 a paper appeared by Dr. J. O. Hirschfelder, of San Francisco, detailing certain experiments made by him in **treatment of pulmonary tuberculosis.** He proposed a theory that is certainly original. This theory was not evolved from the therapeutical results of his injections, but "the method of treatment was a consequence of the biological proposition." He drew attention to the successful results which had followed operations for tuberculous peritonitis, and stated his opinion that "it appears most probable that in these cases the entrance of air into the peritoneal cavity must have been the important factor; that an oxidation of the tuberculin present in the effusion was thus brought about; and that it was this oxytuberculin which effected the cure both of the local and of the general tuberculosis." Acting upon this hypothesis the problem of finding a method of oxidizing the toxin without completely destroying it presented itself, and various methods of accomplishing this result were investigated. Dr. Hirschfelder found in the course of his experiments that the peroxide of hydrogen was the substance for which he was seeking. He then gave a detailed description of the preparation of his tuberculin and the method of oxidizing it, and remarked that the greatest possible care was necessary in the preparation of this oxytuberculin, for if any appreciable quantity should escape oxidation fatal tuberculin poisoning might result from the large quantities which must be administered. The liquid when injected caused no greater local disturbance than any indifferent fluid would produce. There was no rise of temperature or any other unpleasant constitutional effect. Within a few days the cough and expectoration diminished, and the most striking effect was the rapid improvement in the appearance of the patient. He further went on to say: "The patients that have been treated by me with the oxytuberculin, those who came in the very early stage of the disease before cavities were present, have been rapidly cured.... Patients in whom the disease was moderately advanced have likewise rapidly improved, and some have entirely recovered. Of the very advanced cases, many have shown marked improvement, and many patients that I have declined to treat as being too far advanced, but who pleaded so hard for the treatment that I could not refuse, have impressed me by the wonderful improvement they have shown." Tables were printed at the end of the paper giving the number of patients and the treatment at various stages of the disease, and the results as shown were certainly very satisfactory. We cannot comment further until more extended observations have been made, and meanwhile await with interest the results obtained by other physicians who may use oxytuberculin in the treatment of tuberculosis, pulmonary and otherwise.

To prevent involuntary evacuation after **removal of the sphincter ani,** according to Prutz, two methods were followed: 1. Formation of a twist, or kink, in the rectal stump. 2. Formation of a sphincter by carrying the stumps of the rectum through muscle; *e. g.* the gluteus. The first procedure, introduced by Gersung, has been carried out by v. Eiselsberg in those cases in which the bowel could not be drawn down and twisted until a hindrance was felt. A twist of 120 to 270 degrees was generally sufficient. It was then sutured with silk in two stages. Usually the patient was continent from the first. The bowel was sutured to the skin. For the sake of security the patients wore a "pelotte." The sacral anus with twisting had been made six times.—*Med. Press.*

At the Société Médicale des Hôpitaux M. A. Mathieu has described the occurrence of **cancerous changes in gastric ulcers** and has come to the conclusion that it is not very rare. He reports three cases in which the diagnosis of cancer supervening upon ulcer could be made during life, and in which both the post-mortem and the histologic examinations confirmed the diagnosis. In the first case it would appear that the beginning of the disease was marked by an excessive secretion of hydrochloric acid accompanied by pain, which began twenty-four years before death. Ten years before death unmistakable signs of simple gastric ulcer appeared, but the diagnosis of cancer was only made after a laparotomy. In the second case the phenomena of simple ulcer appeared ten years before death. The appearance of acanthosis nigricans and enlargement of the left subclavicular glands led to a diagnosis of cancer nearly two years before death. In the third case the simple ulcer preceded the cancer by nearly two years. At the post-mortem examination the cancerous nature of the lesions was evident by the presence of cancerous nodules in the liver or in the mesenteric glands. In every case there were found in the centre of the cancerous lesion traces of the primitive ulcer, and in one case the ulcer was, so far as naked-eye appearances went, of a simple chronic nature, but there were marked epitheliomatous infiltration and thickening of the muscular coats of the stomach.—*Lancet.*

Lip-Reading for Deaf Mutes by Aid of Photographs—Deaf mutes are taught to understand spoken language by watching movements of the lips and facial muscles. Dr. Gutzmann has recently secured a series of photographs showing these movements and mounted them in a gyroscope, when the words spoken were immediately recognized by the mutes. The *Deutsche Med. Woch.* devotes considerable space to Gutzmann's success, which is sure to prove of the greatest assistance in teaching the deaf to understand spoken words.—*Med. Times.*

Universal Hypertrichosis and Premature Menstruation in a Child is related by Lesser (*Revue des Sciences Med.*). A girl, aged six years, who was not abnormal at birth, showed for the past two years a remarkable development of hair. The body, especially in the lower limbs, was covered with hairs more abundantly than in a very hairy man. The pubic hairs were more developed than in many adult females. There were whiskers on the face. The hair of the head was normal. Menstruation began at the age of three; it lasted six or seven days, and was profuse. In the following eighteen months it reappeared eight or nine times at almost regular intervals, and then ceased. The intelligence was advanced in a corresponding degree. The child's parents and elder brothers and sisters had normal development of hair, but two brothers, aged sixteen and twelve years, and next in age, had precocious beards. The case shows something more than precocious sexual development in the case of the hair. There is also production of male characteristics. Now, curiously, in the adult female this event is also associated with abnormal conditions of the genital organs.—*Lancet.*

There is, no doubt, some truth, says the *Medical Press*, in the complaint that medical men of the present day have not a sufficient acquaintance with the disease to enable them to **diagnose small-pox with certainty** *Apropos* of two cases of failure in this connection which had recently come under notice, it is admitted that it is not altogether the fault of the practitioners. Under present circumstances it is quite possiole for a student to pass through his whole curriculum without seeing a case of small-pox. In this connection a somewhat amusing incident took place a few years ago at a large hospital in London. The new house physician admitted a patient to the wards with an extensive skin eruption, which he had diagnosed as syphilitic. In the course of the next day the visiting physician saw the case, and pronounced it to be small-pox. Great consternation followed the announcement of this opinion. The ward was cleared of patients and disinfected, the patient transferred at once to the nearest small-pox hospital, and the incident for some time afterwards was a subject of animated discussion in the institution. Shortly afterwards another apparently similar case came for treatment. This time the house physician knew exactly what to do. The man was at once despatched to the small-pox hospital. But the patient was promptly returned with a note to the effect that the case was one of syphilis.

The tympany of enteric fever can often be favorably influenced by rectal injections of from five to six ounces of ice water, retained for some time in the bowel.

Abbe (*International Journal of Surgery*, June, 1897), states that **the old Malgaine operation for hare-lip** has been very generally abandoned. In mild cases all that is needed is a simple plastic operation adapted to the individual case. In the more serious deformities the nostrils are flaring, and when the intermaxillary mass is attached to the nose, no simple procedure can be described for any case. The author pares off and sacrifices a portion of the red lip on the best side, and then brings down a mass on the opposite side to make the central portion of the lip. It is necessary, however, to take into consideration the displacement of the tip of the nose to the side opposite the cleft; it must be brought forward with considerable force and held there. He has recently adopted the plan of inserting two heavy Hagedorn needles, one in the skin under the columnæ, and the other in the alæ nasi at the side which rises, driving through the lip into the bone. This procedure keeps the parts absolutely in place.

Results of More or Less Complete Obstruction of the Nose.—It has been suggested that many anemic conditions, etc., are to a more or less degree due to obstruction of the nose, producing numerous derangements, both in respiration, mastication and anatomic development, far more than has been hitherto realized. The organism does not obtain the requisite amount of oxygen, the secretion of saliva is affected, sleep disturbed, and the necessity of securing free nasal respiration is shown to be imperative, in an article in the *Presse Med.*, which describes the numerous evils of buccal respiration.—*Jour. A. M. A.*

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NEWS AND MISCELLANY.

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